TA-8650

US Model
UK Model
AEP Model
E Model

INTEGRATED STEREO AMPLIFIER

SPECIFICATIONS

GENERAL

System: Power Amplifier Section
Direct-coupling V-FET pure complementary symmetry circuit
Preamplifier Section
Direct-coupling module unit amp

Power requirements: 120 V ac, 60 Hz (USA Model)
100, 120, 220 or 240 V ac adjustable, 50/60 Hz (AEP, UK, E Model)

Power consumption: 260 watts (USA Model)
800 watts (AEP, E Model)
600 watts (UK Model)

Ac outlets: 2 switched 200 watts, 1 unswitched 400 watts (USA, E Model)

Dimensions: 440 (w) × 170 (h) × 425 (d) mm
17 3/8 (w) × 6 3/4 (h) × 16 3/4 (d) inches

Weight: 20.8 kg (46 lb), net
24.5 kg (54 lb), in shipping carton

POWER AMPLIFIER SECTION

Continuous RMS power output: (less than 0.1 % THD, both channels driven simultaneously) At 20 Hz – 20 kHz
80 watts per channel (8 ohms)

Power bandwidth: (IHF) 5 Hz – 50 kHz

Harmonic distortion: (20 Hz – 20 kHz) Less than 0.05 % at 1 watt output
Less than 0.1 % at rated output

IM distortion: (60 Hz : 7 kHz = 4 : 1) Less than 0.05 % at 1 watt output
Less than 0.1 % at rated output

Frequency response: 5 Hz – 100 kHz $^{+0}_{-1.5}$ dB at 1 watt output
20 Hz – 20 kHz ±0.1 dB at rated output

Residual noise: Less than 1 μ watt

S/N: More than 100 dB (network A, short-circuited)

Damping factor: More than 200/8 ohms (at 1 kHz, Speaker DIRECT)

Inputs: POWER AMP INPUT; sensitivity 1 volt (for rated output), impedance 50 kohms

Outputs: SPEAKER terminals – A, B, DIRECT; accept 4 ohms or more speakers.
HEADPHONE jack; accepts low and high-impedance stereo headphones

PREAMPLIFIER SECTION

Harmonic distortion: Less than 0.03 % at rated output, 1 kHz

IM distortion: (60 Hz : 7 kHz = 4 : 1) Less than 0.05 % at rated output

– Continued on page 2 –

SONY®
SERVICE MANUAL

Frequency response:
PHONO 1, 2 RIAA equalization ±0.2 dB
MIC 20 Hz – 20 kHz $^{+0}_{-2.5}$ dB
TUNER, AUX 1, 2, 3, TAPE 1, 2, EXT ADPT (INPUT) } 10 Hz – 100 kHz $^{+0}_{-2}$ dB

Tone controls:
BASS control
±10 dB at 50 Hz (TURNOVER FREQ 250 Hz)
±10 dB at 100 Hz (TURNOVER FREQ 500 Hz)
TREBLE control
±10 dB at 10 kHz (TURNOVER FREQ 2.5 kHz)
±10 dB at 20 kHz (TURNOVER FREQ 5 kHz)

Filters:
LOW 12 dB/octave attenuation below 10 Hz or 40 Hz
HIGH 12 dB/octave attenuation above 9 kHz or 20 kHz

Acoustic compensator:

LOW 1	+10 dB at 20 Hz +6 dB at 50 Hz +3 dB at 100 Hz
LOW 2	+11 dB at 20 Hz +9 dB at 50 Hz +6 dB at 100 Hz
PRESENCE	+3 dB at 1 kHz
LOUDNESS	+10 dB at 50 Hz +3 dB at 10 kHz

Inputs:

Inputs	Sensitivity*1	Maximum input capability*2	Impedance	S/N (weighting network, input level)
PHONO 1	2.5 mV	175 mV	50 kΩ	70 dB (A, 2.5 mV)
PHONO 2 L			50 kΩ/100 kΩ	
PHONO 2 H	4.5 mV	310 mV		75 dB (A, 4.5 mV)
HEAD AMP	0.1 mV	7 mV	30 Ω	55 dB (A, 0.1 mV)
MIC	0.2 mV	2 V	50 kΩ	40 dB (B, 0.2 mV)
TUNER, AUX 1, 2, 3, TAPE 1, 2, EXT ADPT	150 mV	–	100 kΩ	85 dB (A, 150 mV)

*1 The sensitivities of AUX 1, TAPE 1, TAPE 2 and MIC are adjustable.
*2 The maximum input capabilities are measured at a 0.1 % THD.

Outputs:

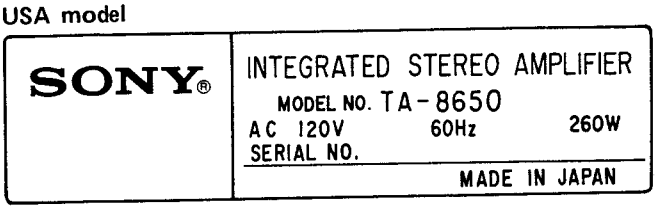
Outputs	Output voltage	Impedance
REC OUT 1, 2	150 mV (max. 10 V)	600 Ω
PREAMP OUTPUT	1 V (max. 10 V)	
EXT ADPT	150 mV (max. 10 V)	10 kΩ

Voltage amplification (at 1 kHz):

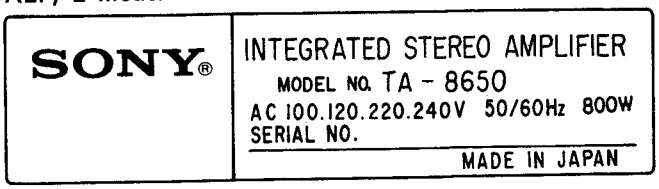
Input \ Output	REC OUT	EXT ADPT	PREAMP OUTPUT
PHONO 1	35 dB		52 dB
PHONO 2 L			
PHONO 2 H	30 dB		47 dB
HEAD AMP	63 dB		80 dB
MIC	57.5 dB		74.5 dB
TUNER, AUX 1, 2, 3, TAPE 1, 2, EXT ADPT	0 dB		17 dB

Specification Label:

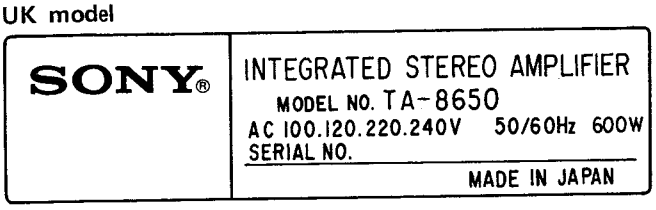
USA model



AEP, E model



UK model

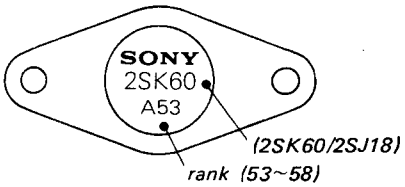


SERVICING NOTES

1. Apply the rated ac line voltage to the set directly. Do not increase the voltage gradually by using a variable transformer or other such instrument: this will cause a V-FET failure.

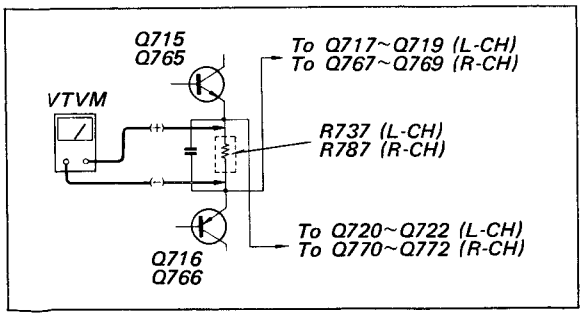
2. Replacing V-FET
TA-8650 uses six V-FETs (2SK60...3 pcs, 2SJ18...3 pcs) in each channel of its power amplifier. Both 2SK60 and 2SJ18 are divided into six ranks according to their Vsgo (gate-source voltage) and Vp (cut-off voltage). The bias resistors of the V-FET differ from a rank to a rank, and it is necessary to use the same rank of V-FETs in the same channel.
If you cannot obtain the same rank of V-FET replacement as the one used in the reparing set, replace all six V-FETs. At the same time, replace the bias resistors according to the table given at right.

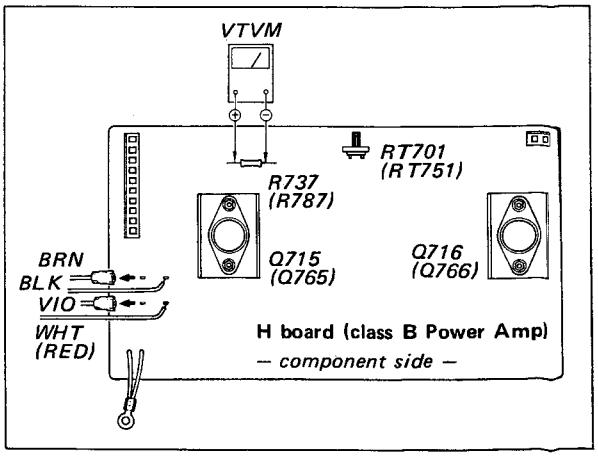
Rank of 2SK60 2SJ18	Bias Resistors	
	R725, R775	R731, R781 R732, R782
53	33 kΩ	1.8 kΩ
54	33 kΩ	1.5 kΩ
55	33 kΩ	1.2 kΩ
56	30 kΩ	1.0 kΩ
57	30 kΩ	1.0 kΩ
58	30 kΩ	820 Ω



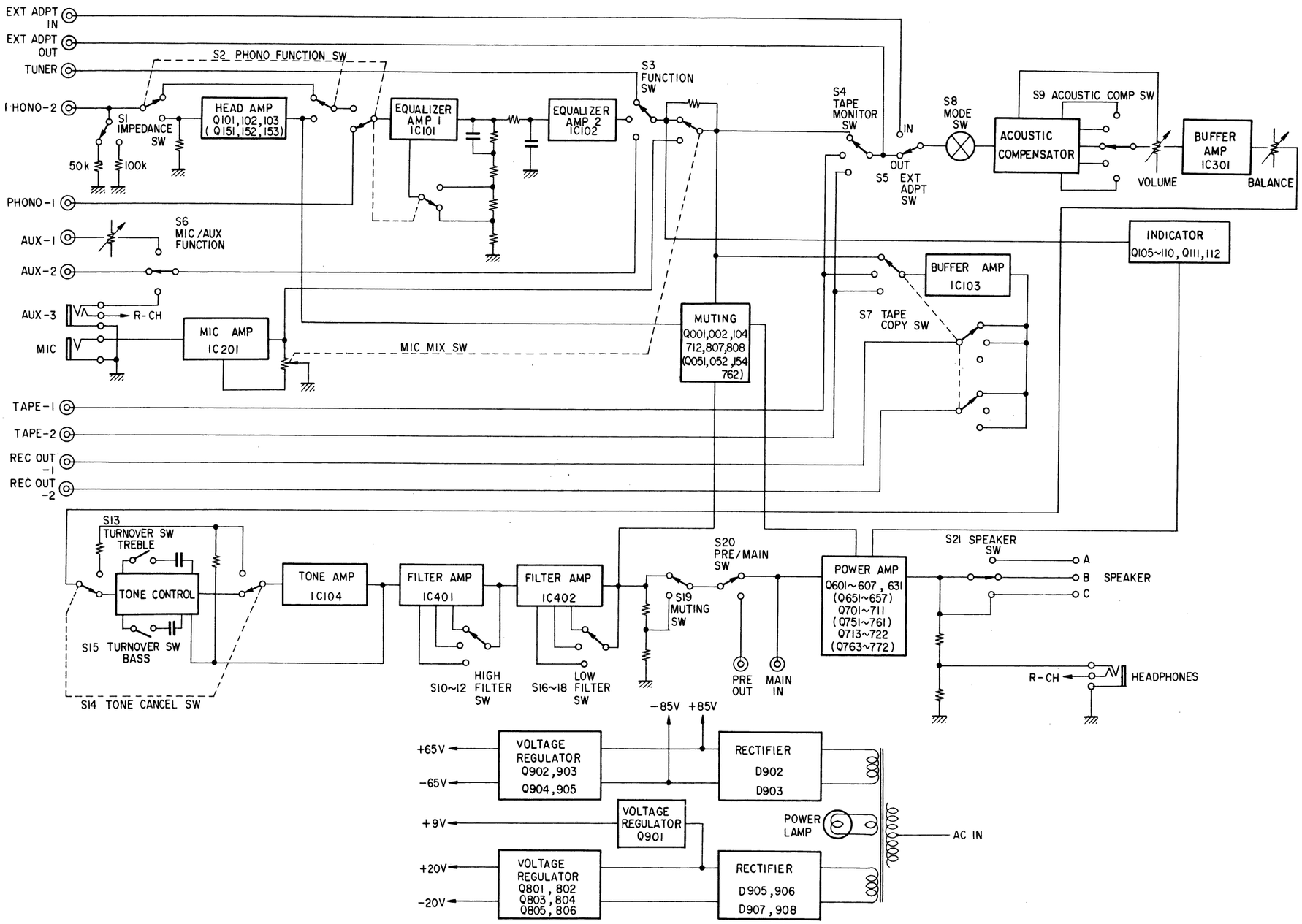
3. After the replacement of V-FET, carry out the following check to avoid further occurance of V-FET failure.
   1) Turn off the power of TA-8650.
   2) Remove the heat sink duct.
   3) Disconnect the brown and the violet lead wires from the pins on H Board (CLASS B POWER AMP BOARD). See the figure at bottom right.
   4) Turn on the power and check the voltage across R737 (L-CH)/R787 (R-CH). If the reading does not agree with the value given in the table at right, try adjusting RT701 (L-CH)/RT751 (R-CH).
   5) If adjusting RT701/RT751 still does not give correct reading, check Q713 ~ Q716 (L-CH)/Q763 ~ Q766 (R-CH). Failure of these transistors will cause V-FET failure.
   6) After the check, turn off the power of the set and put back the two lead wires mentioned in step 2.

Rank of 2SK60 2SJ18 used in the set	Voltage drop across R737 (L-CH) R787 (R-CH)
53	20.0 V ~ 25.0 V
54	25.0 V ~ 30.0 V
55	30.0 V ~ 35.0 V
56	35.0 V ~ 40.0 V
57	40.0 V ~ 45.0 V
58	45.0 V ~ 50.0 V





SECTION 1
BLOCK DIAGRAM



SECTION 2
DISASSEMBLY AND REPLACEMENT

2-1. CHASSIS LAYOUT

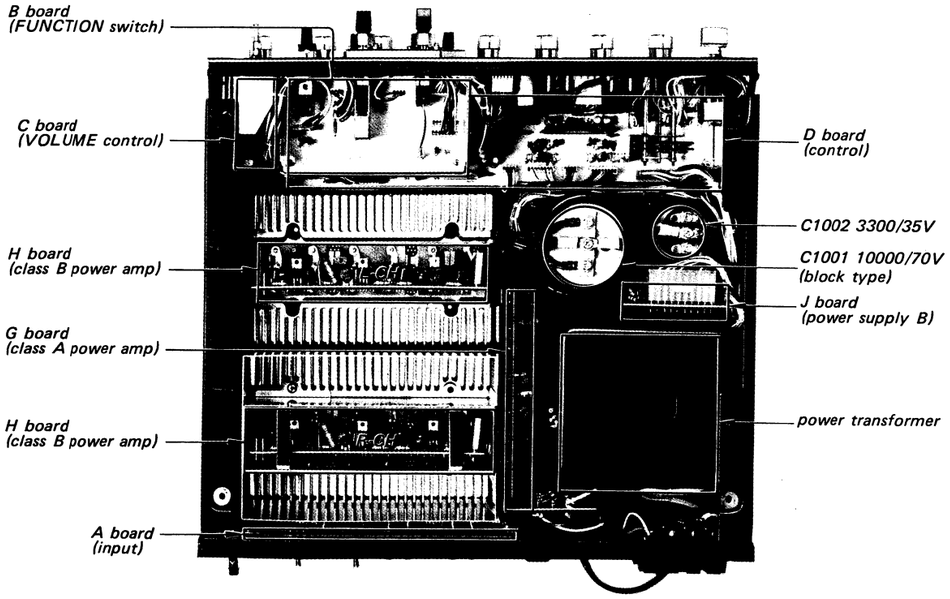


Fig. 2-1. Chassis top view

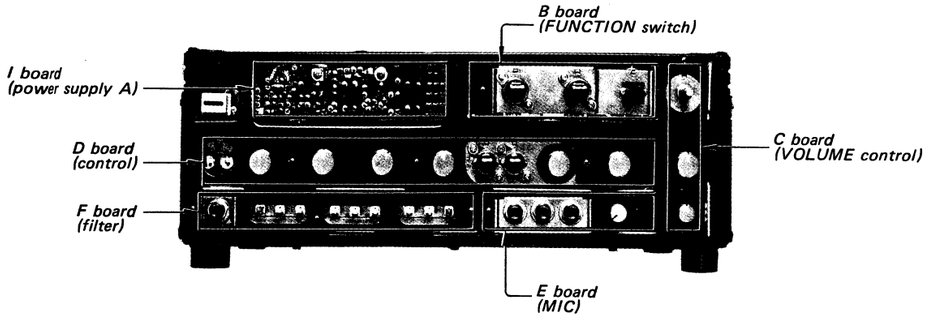


Fig. 2-2. Chassis front view

2-2. PANELS AND KNOBS REMOVAL

Front Panel

Remove ❶, ❷, ❸, ❹, and ❺.

Control Panel

Remove the front panel.
Remove ❻

Front Subchassis

Remove the front panel.
Remove ❼.

Rear Panel

Remove ❽.

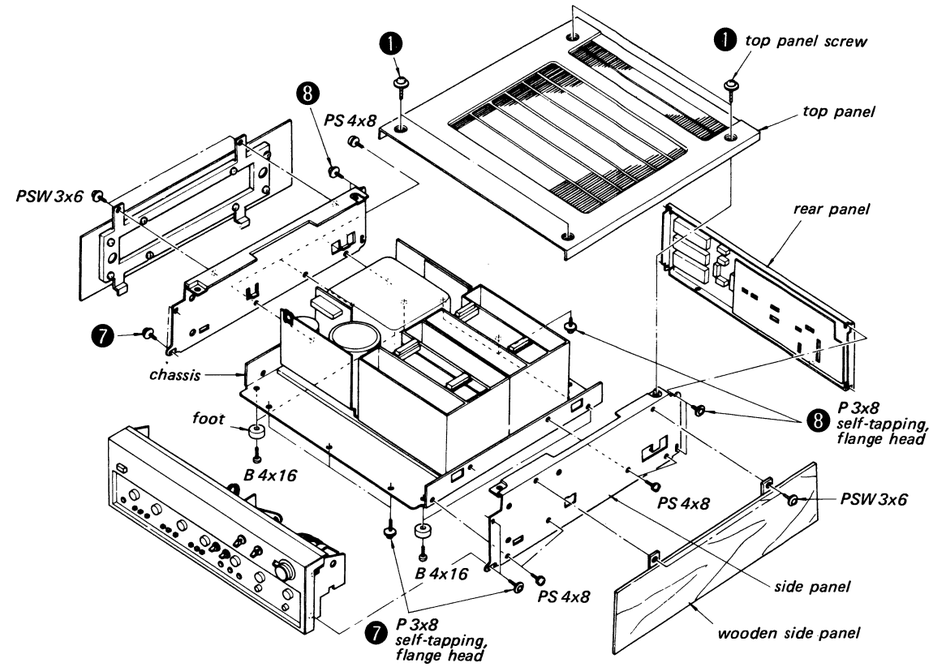


Fig. 2-3.

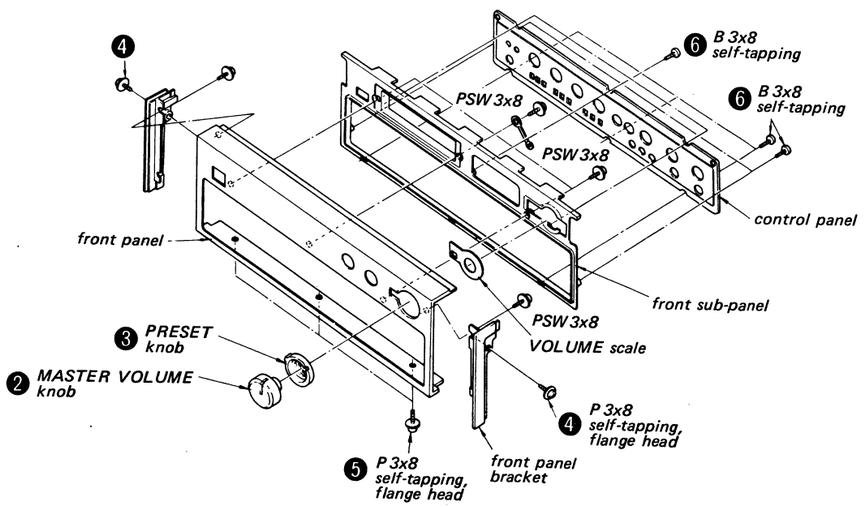


Fig. 2-4.

Knobs Removal

MASTER VOLUME knob, PRESET knob .... loosen the set screw.

POWER switch knob ..... remove the front panel and pull out the knob from switch.

Pushbuttons ..... remove the front panel and push out the knobs.

Other knobs ..... pull out the knobs

2-3. CIRCUIT BOARD REMOVAL AND V-FET REPLACEMENT

Note: Be careful with the position and the direction of the connectors when reinstalling them to the circuit boards. See Fig. 2-5.

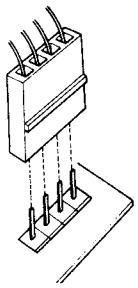


Fig. 2-5.

<A board>

Remove the rear panel.

Remove ❾, ❿, and ⓫

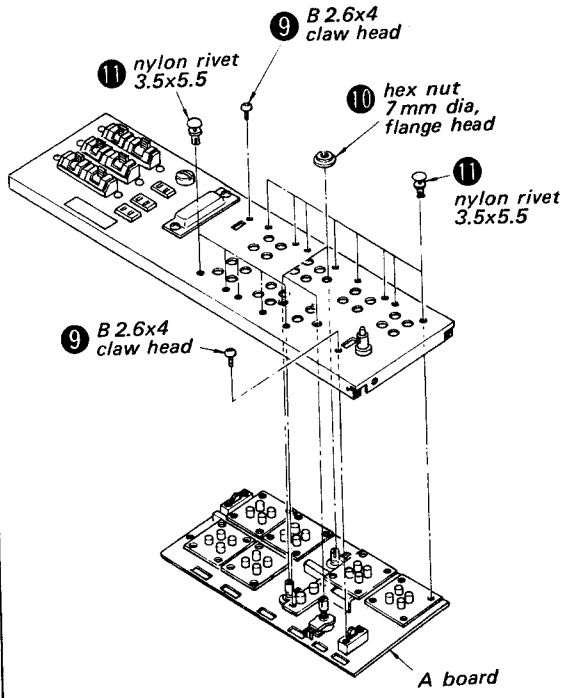


Fig. 2-8.

<G board>

Remove ⓱

Pull up the board.

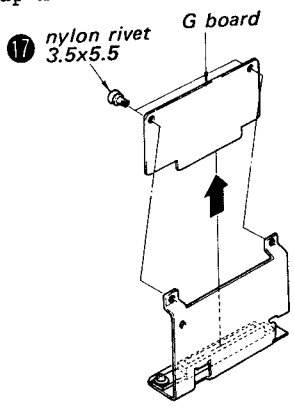


Fig. 2-6.

<B, C, D, E, and F boards>

Remove the front sub-panel.

Remove ⓬ ~ ⓰

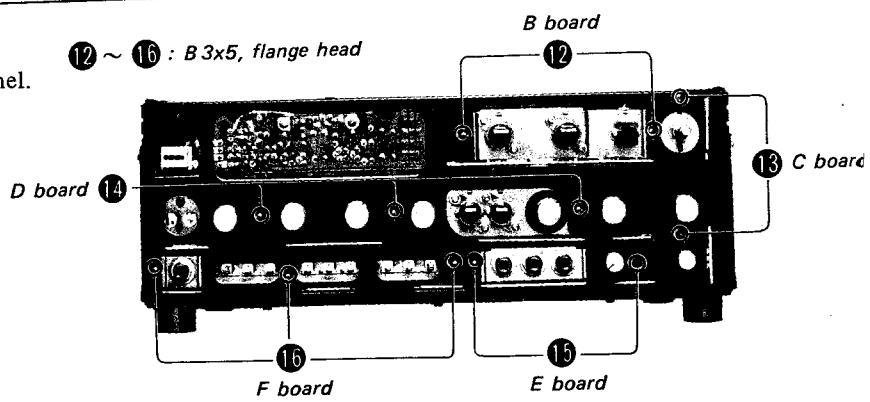


Fig. 2-7.

<H board>

Remove the heat sink duct (remove ⑱).

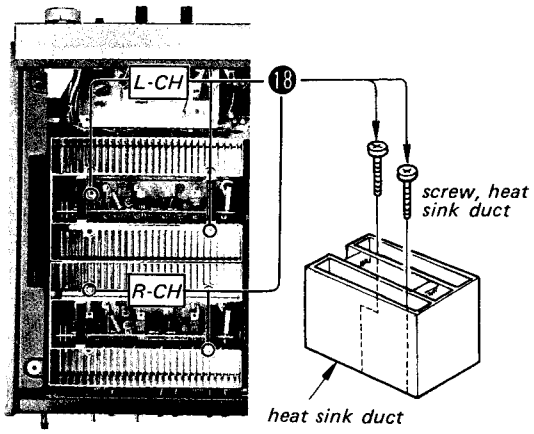


Fig. 2-9.

Remove ⑲ and take out the heat sink with the circuit board.

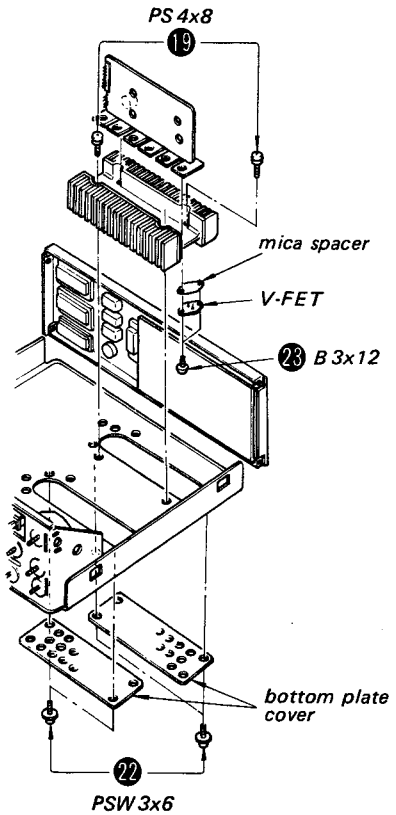


Fig. 2-10.

<I board>

Remove ⑳

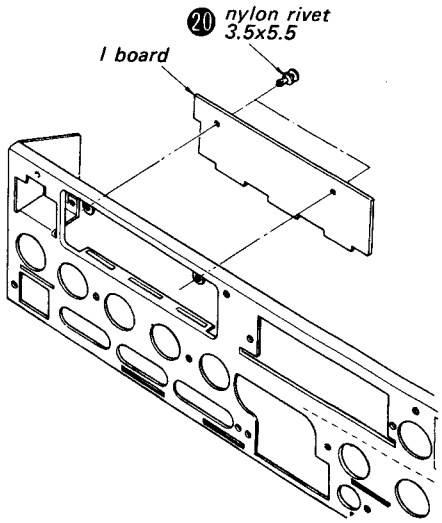


Fig. 2-11.

<J board>

Remove ㉑

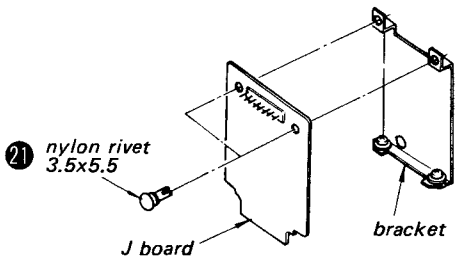


Fig. 2-12.

<V-FET Replacement>

Remove ㉒ and ㉓ (Fig. 2-10).

MEMO

SECTION 3
DC BALANCE AND BIAS ADJUSTMENTS

Note 1. Apply the rated ac line voltage to the set directly. Do not increase the voltage gradually by using a variable transformer or other such instruments: this will cause a V-FET failure.

2. Turn on the power of the set and wait a few minutes for warm-up.

3. Alternately repeat the two adjustments 2~3 times.

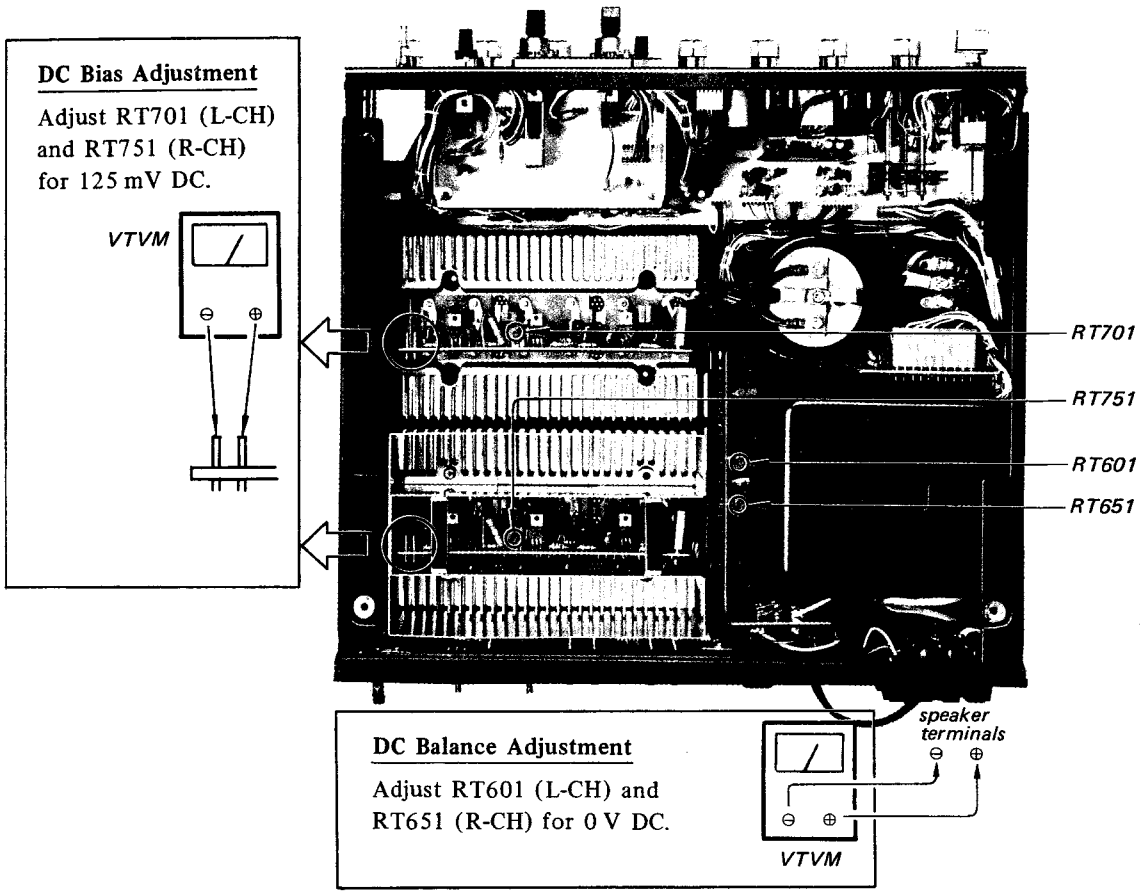
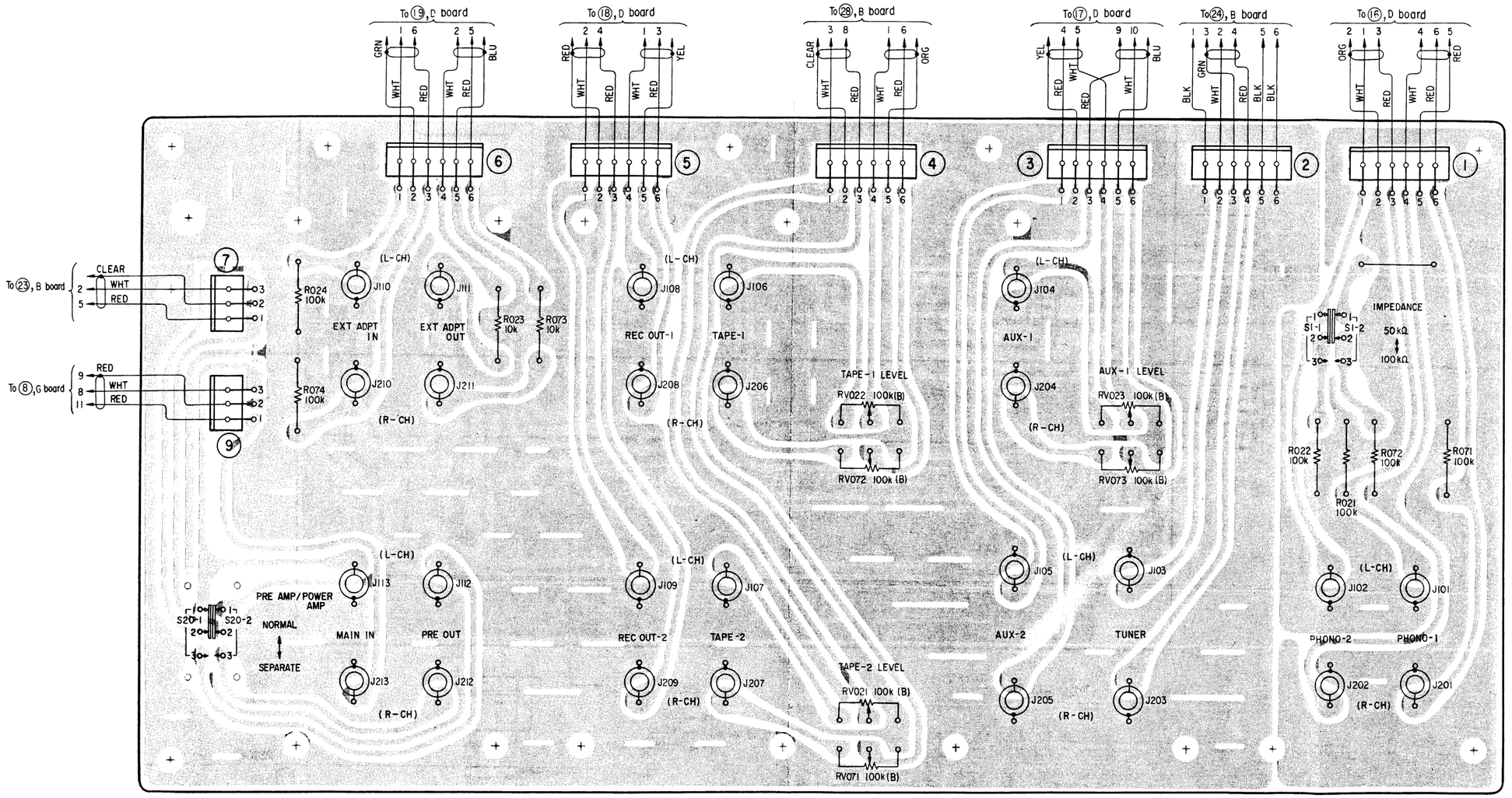


Fig. 3-1.

SECTION 4
DIAGRAMS

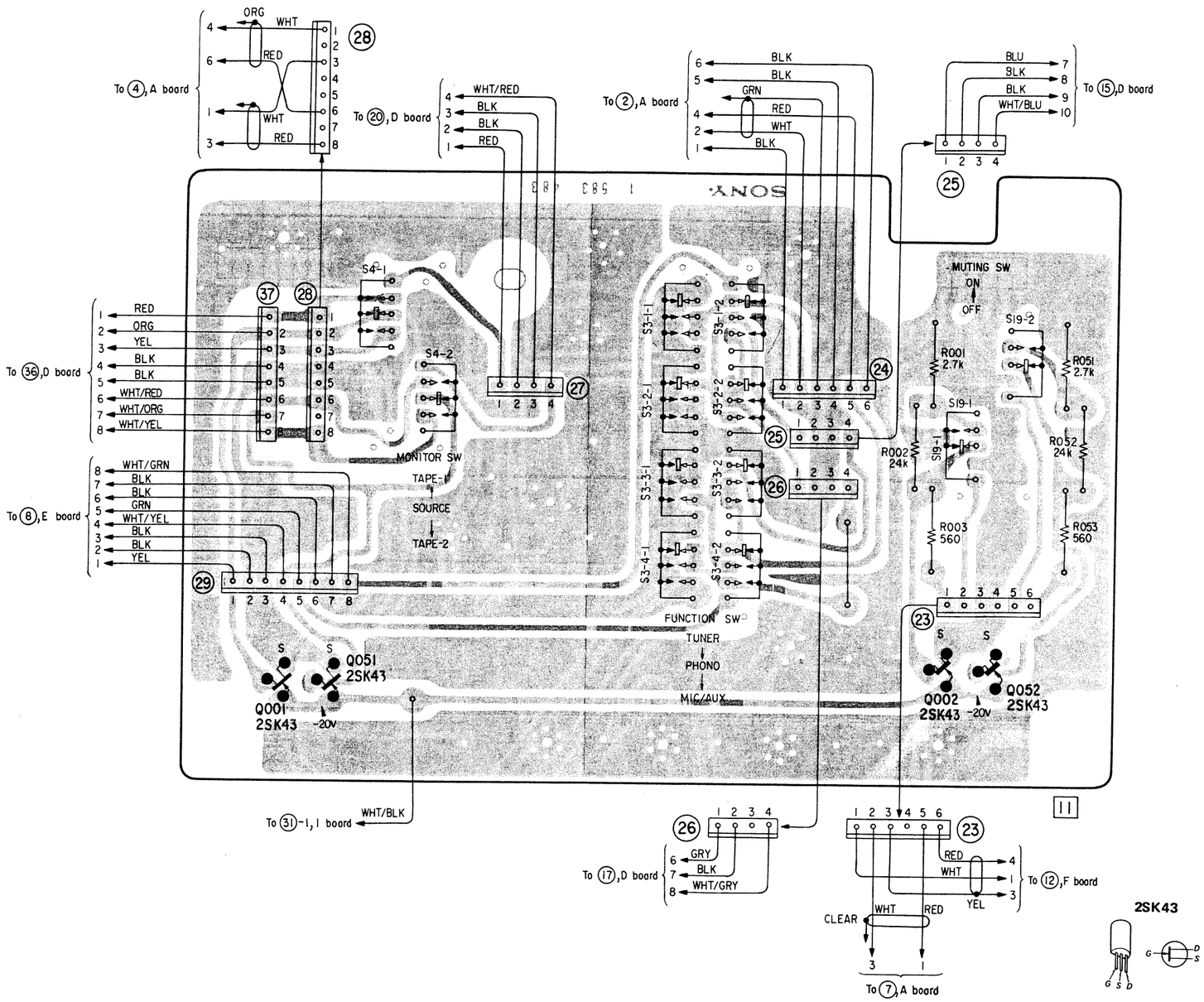
4-1. MOUNTING DIAGRAM – A Board INPUT –

– Conductor Side –



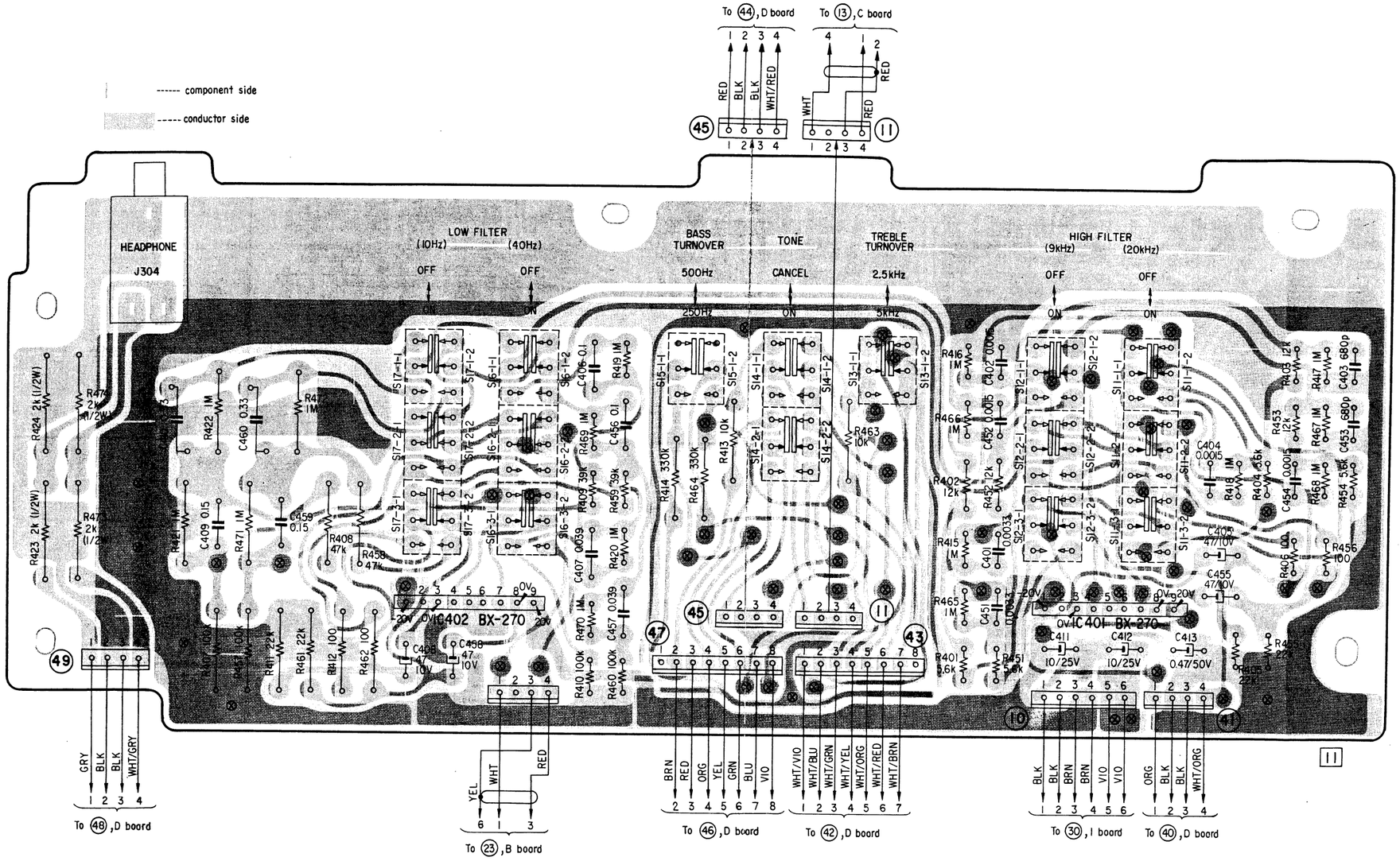
4-2. MOUNTING DIAGRAM – B Board FUNCTION SWITCH –

– Conductor Side –



4-3. MOUNTING DIAGRAM – F Board [FILTER] –

– Conductor Side –



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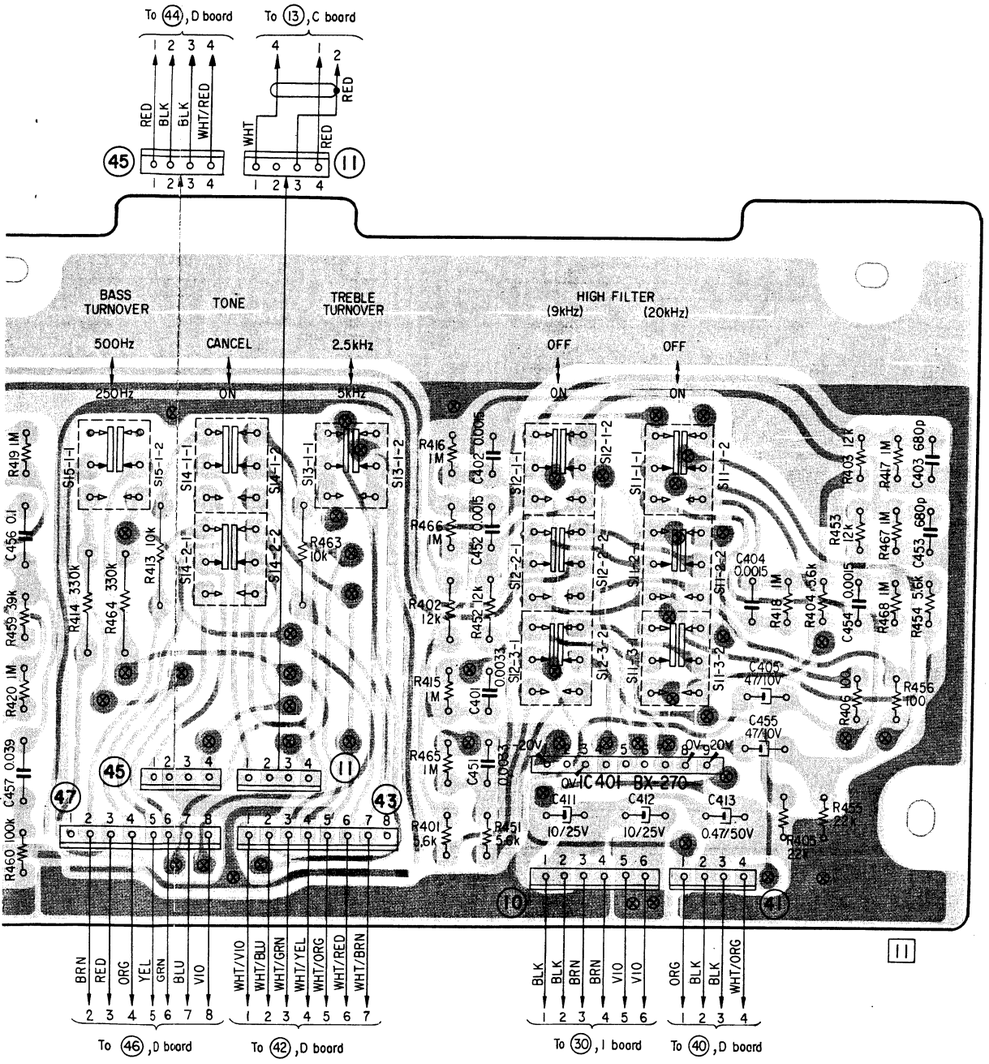

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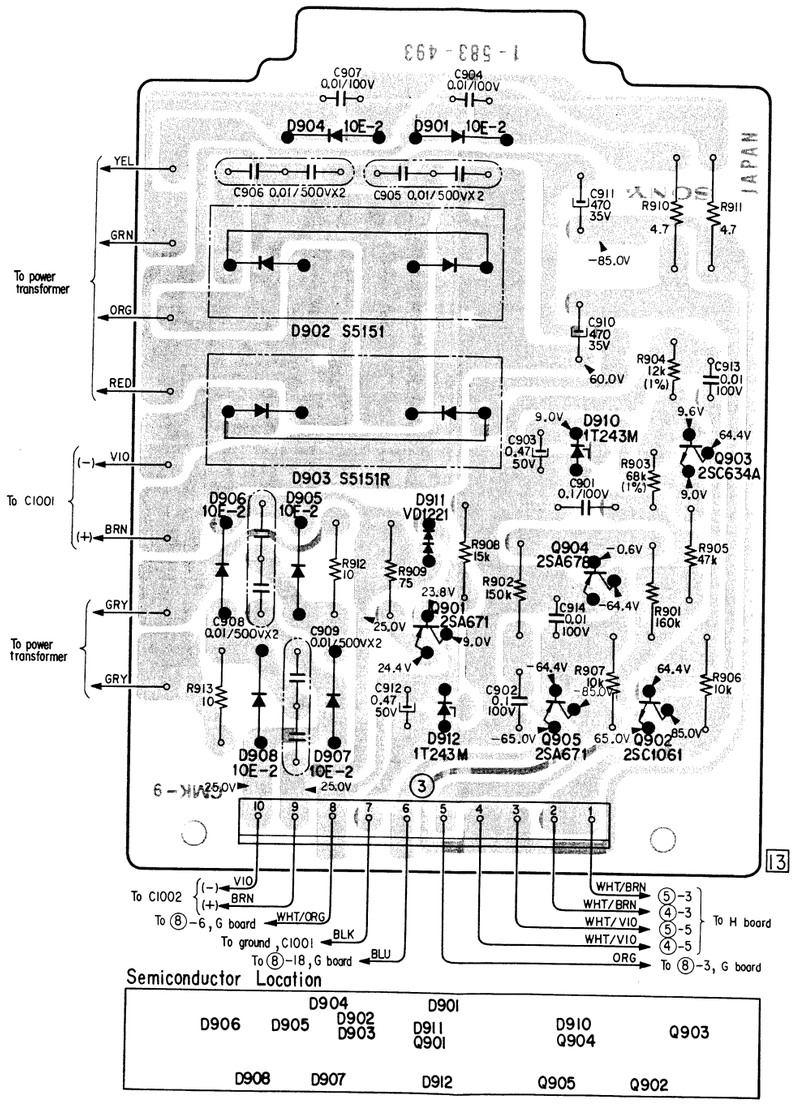
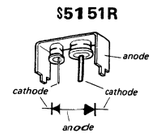
4-4. MOUNTING DIAGRAM — J Board POWER SUPPLY B —

— Conductor Side —

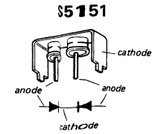


Semiconductor Location

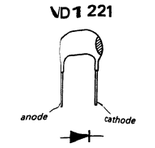
S5151R



S5151



VD1221



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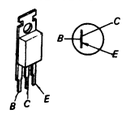
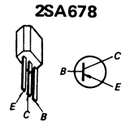


2SA678



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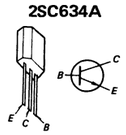

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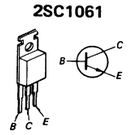

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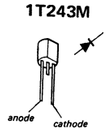
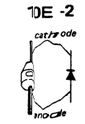


1DE-2

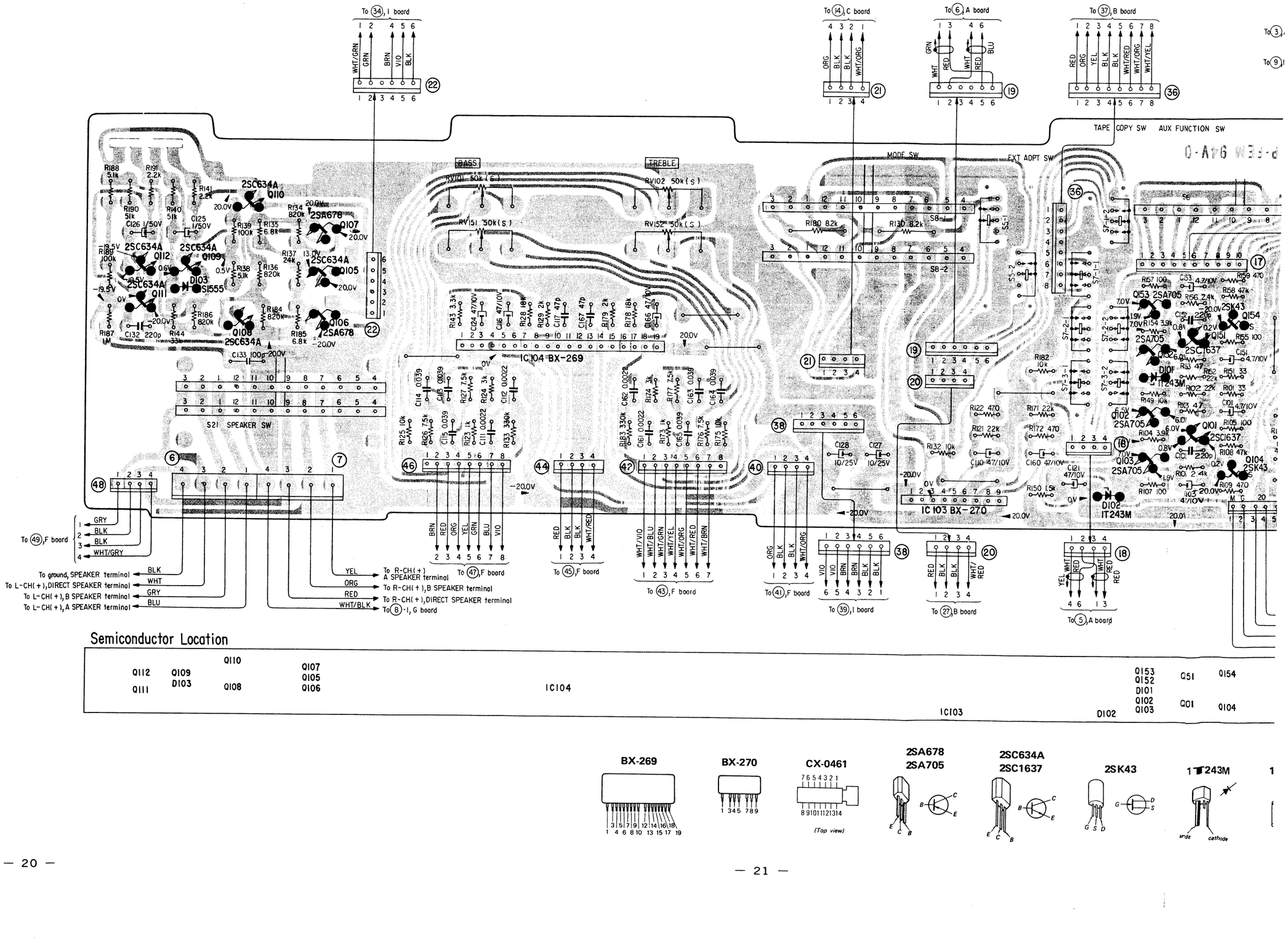


D D

D D

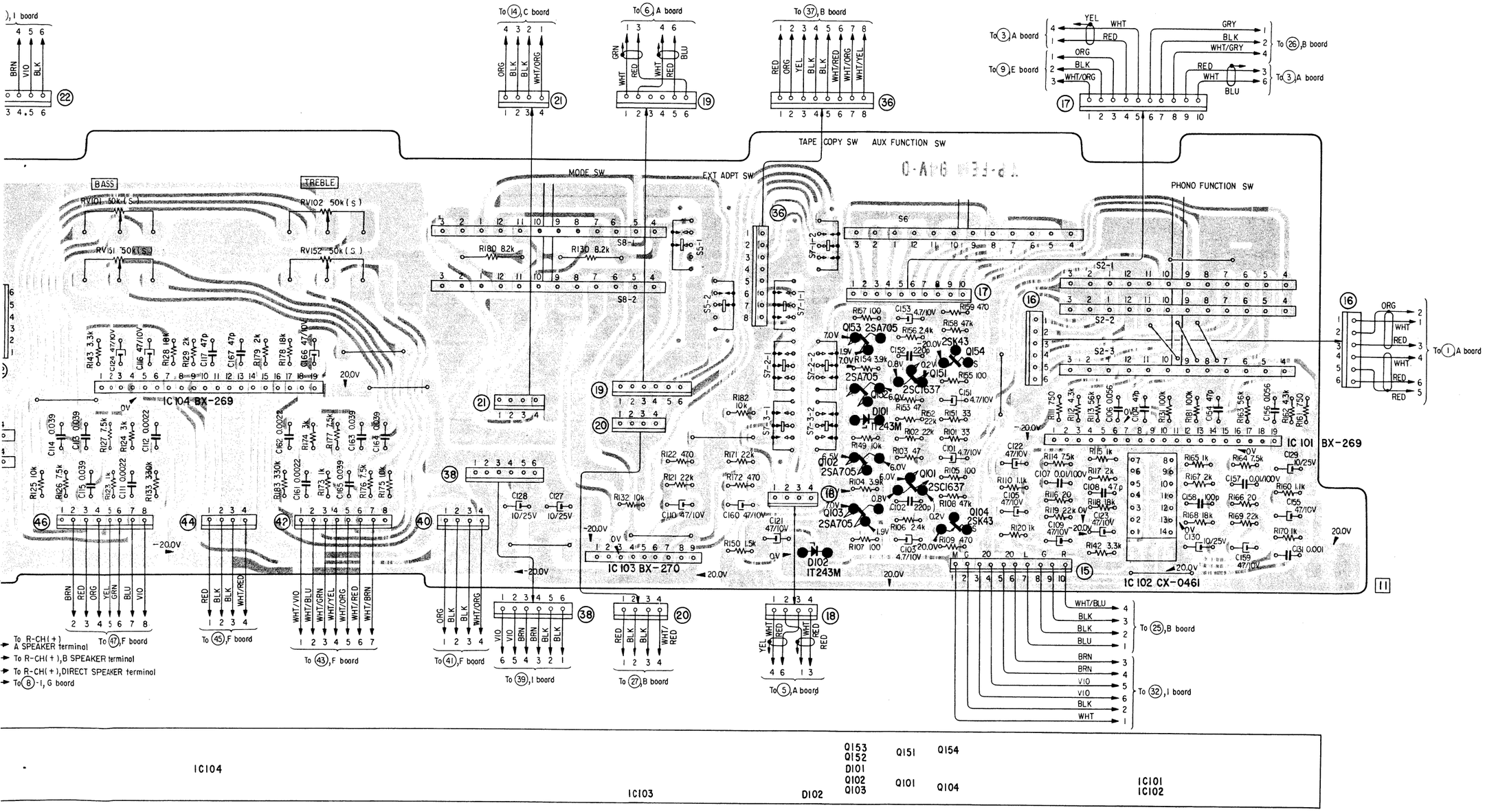
4-5. MOUNTING DIAGRAM — D Board CONTROL —

— Conductor Side —



Semiconductor Location

| | | |



IC104 IC103 D102 Q153 Q152 D101 Q102 Q103 Q151 Q101 Q154 Q104 IC101 IC102

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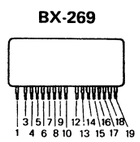
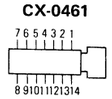
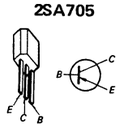


BX-270

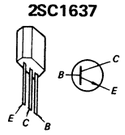
CX-0461



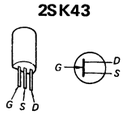
2SA678 2SA705



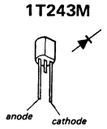
2SC634A 2SC1637



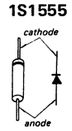
2SK43



1T243M



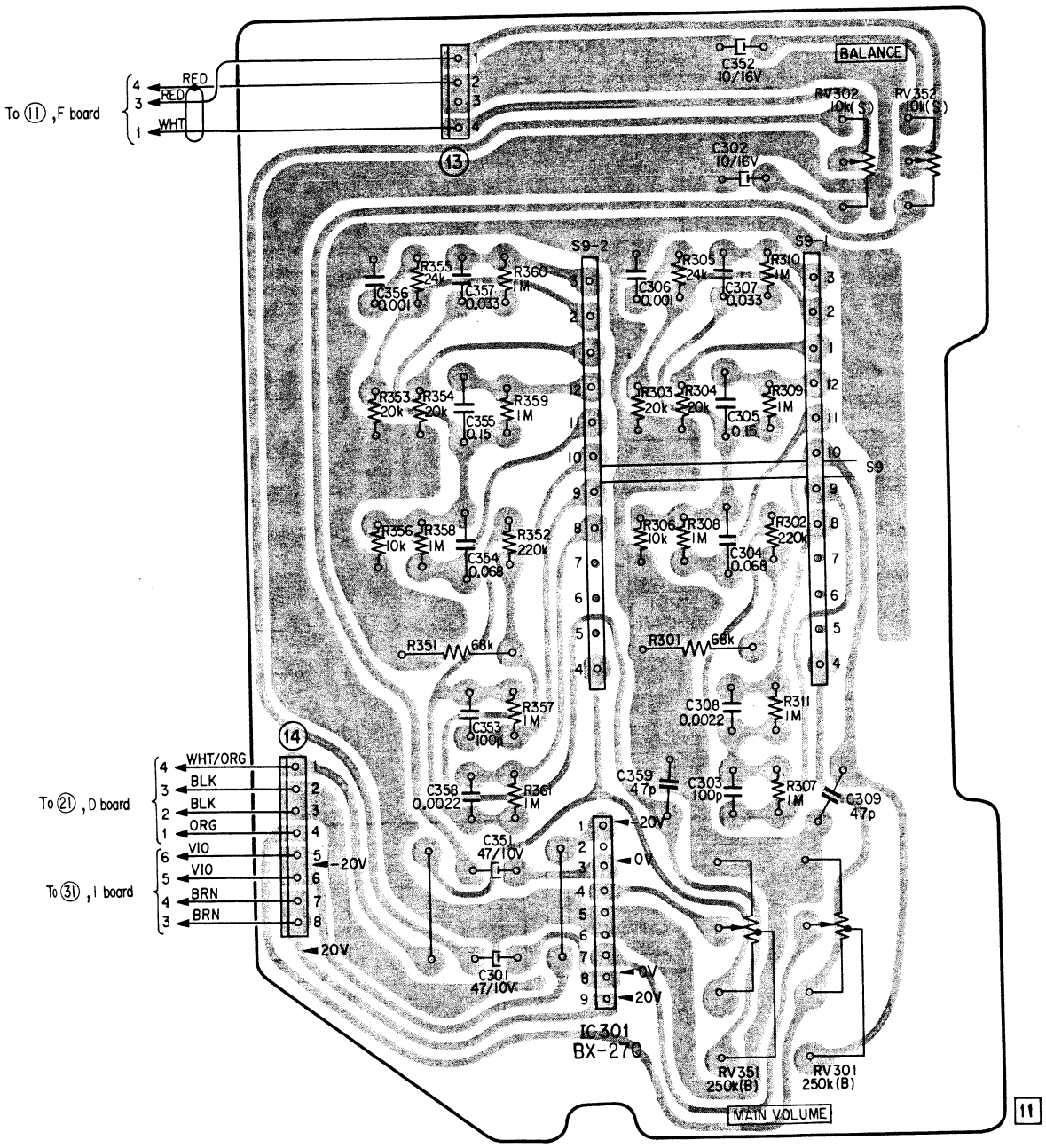
1S1555



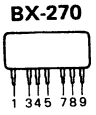
* D104 and D105 are mounted on a small printed circuit board which stands on D board at 90°.

4-6. MOUNTING DIAGRAM – C Board VOLUME CONTROL –

– Conductor Side –



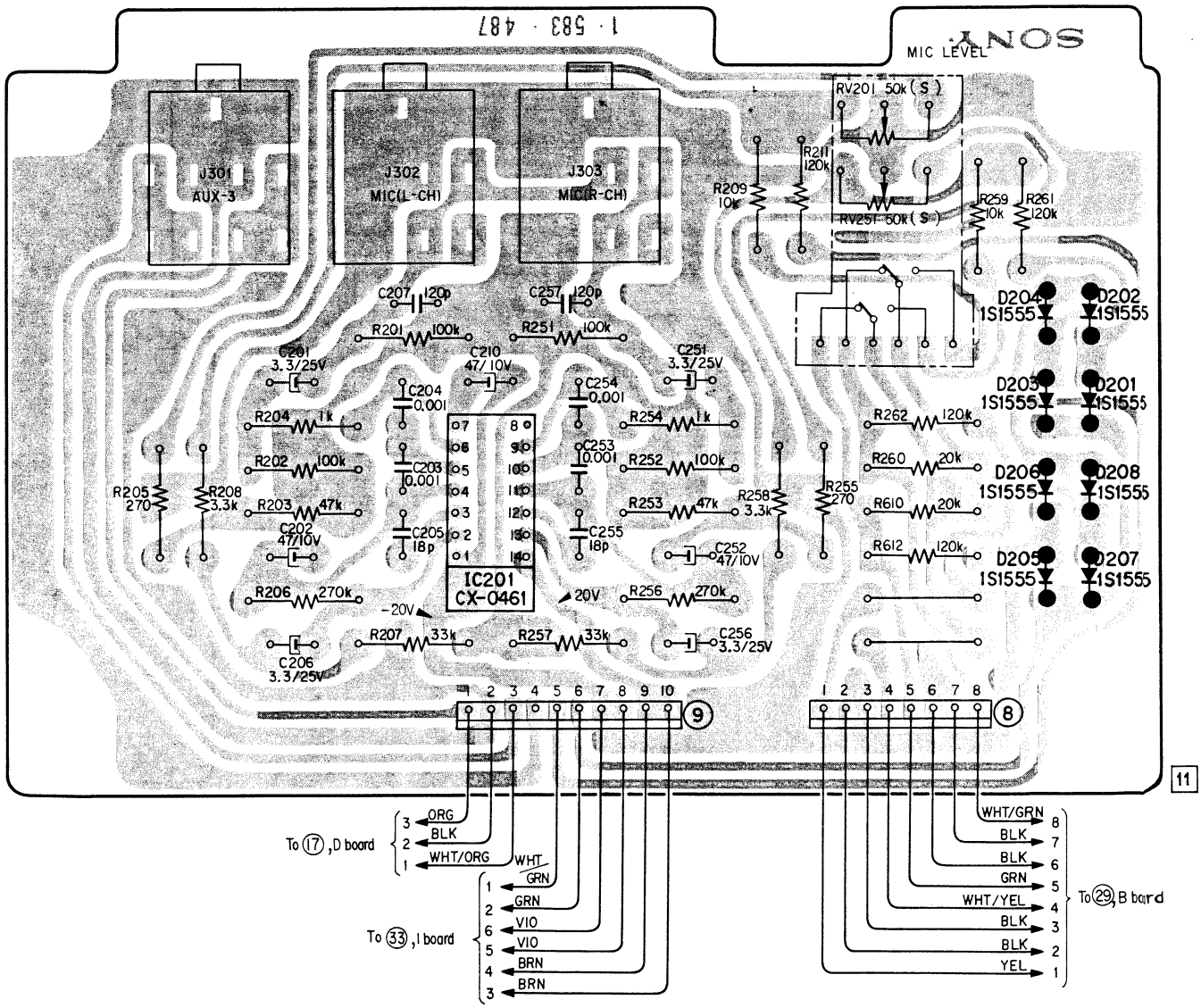
BX-270



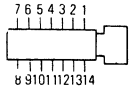
E

4-7. MOUNTING DIAGRAM – E Board MIC AMP –

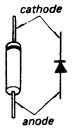
– Conductor Side –



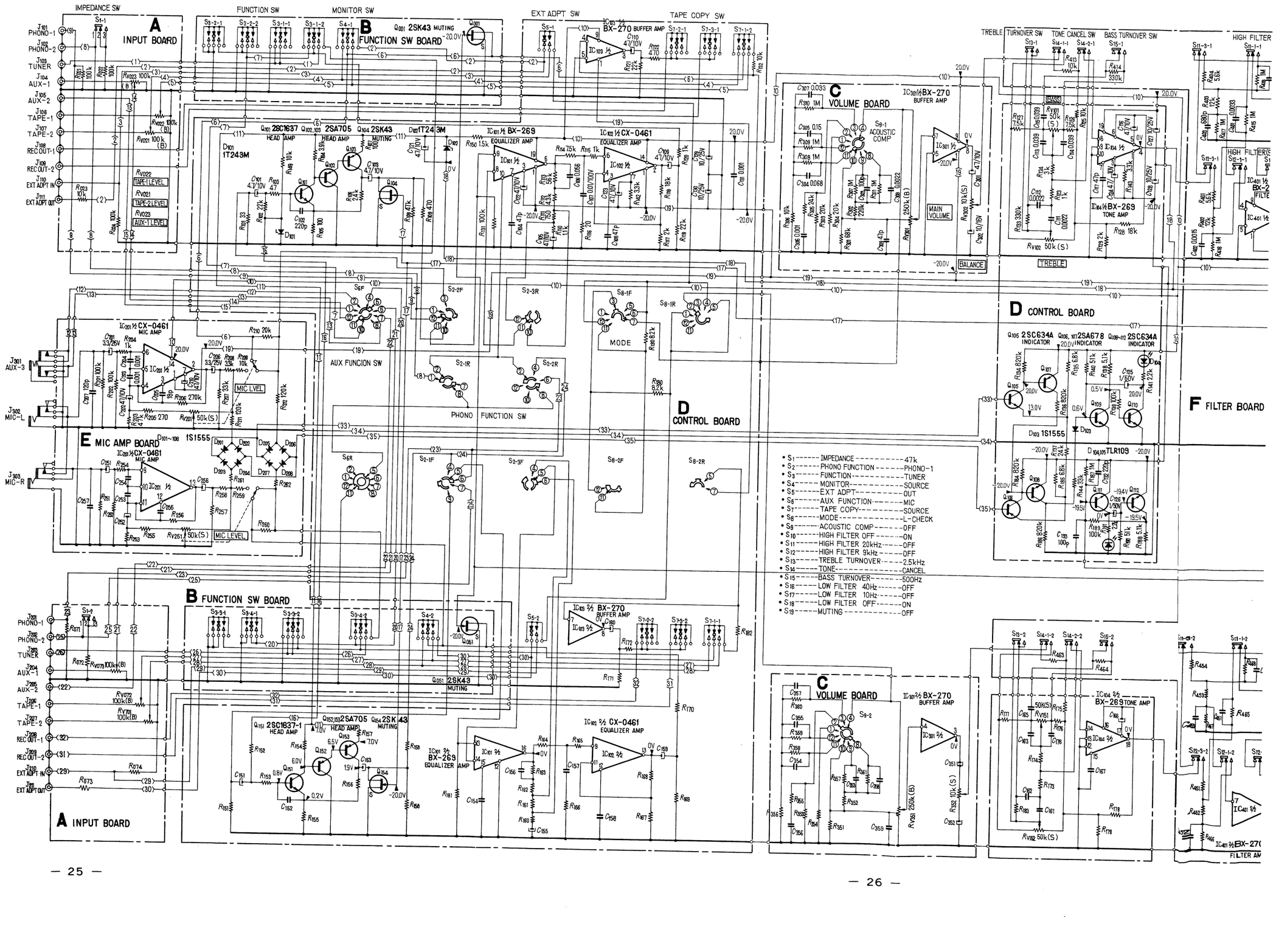
CX-0461

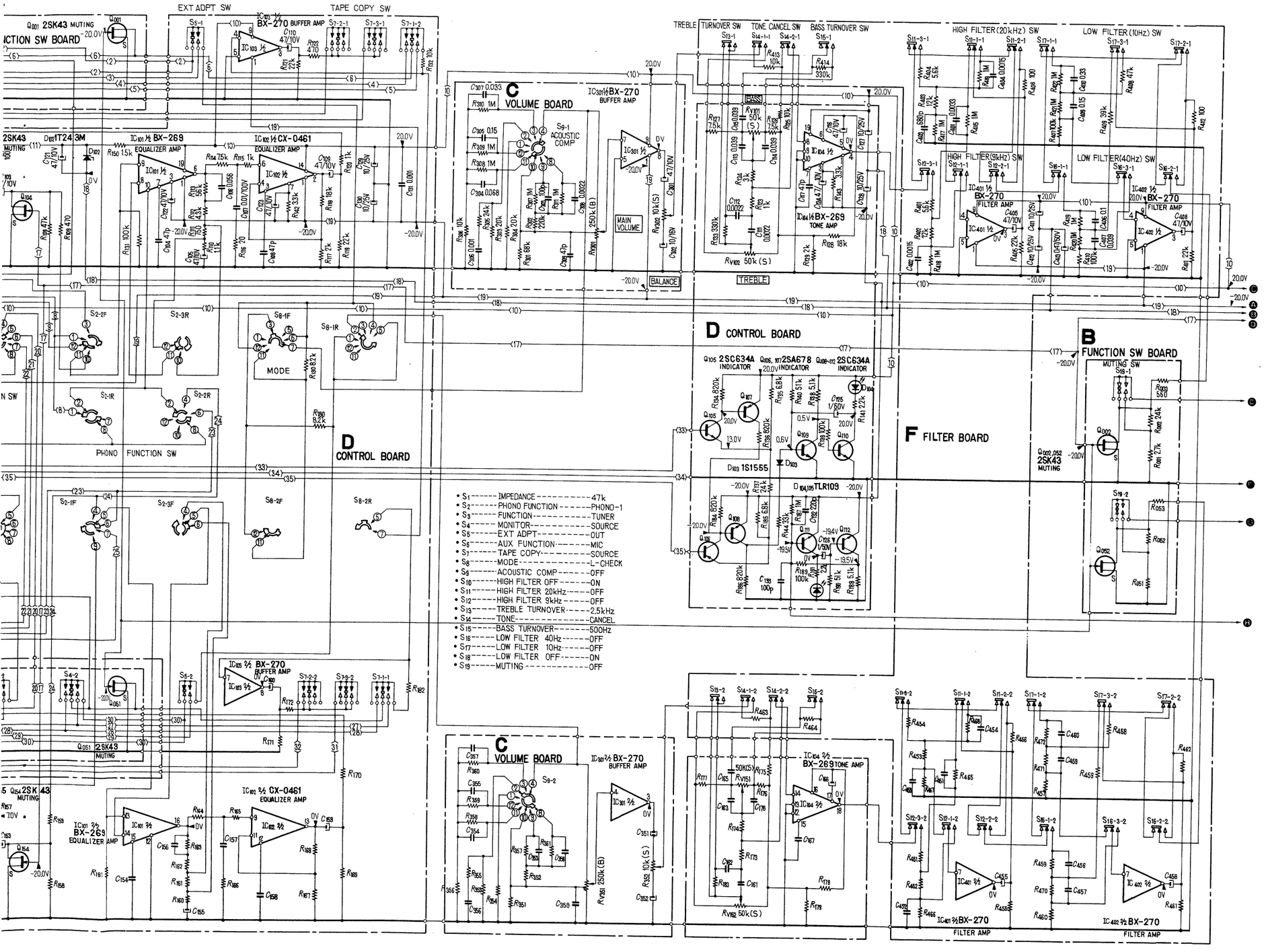


1S1555



4-8. SCHEMATIC DIAGRAM — Preamp Section —


A INPUT BOARD
B FUNCTION SW BOARD
C VOLUME BOARD
D CONTROL BOARD
E MIC AMP BOARD
F FILTER BOARD
IMPEDANCE SW
FUNCTION SW
MONITOR SW
EXT ADPT SW
TAPE COPY SW
TREBLE
TURNOVER SW
TONE CANCEL SW
BASS TURNOVER SW
HIGH FILTER
AUX FUNCION SW
PHONO FUNCTION SW
MODE
MIC LVEL
TREBLE
BALANCE
MAIN VOLUME
• S1 ------ IMPEDANCE ---------- 47k
• S2 ------ PHONO FUNCTION ------ PHONO-1
• S3 ------ FUNCTION ---------- TUNER
• S4 ------ MONITOR ---------- SOURCE
• S5 ------ EXT ADPT ---------- OUT
• S6 ------ AUX FUNCTION ------ MIC
• S7 ------ TAPE COPY ---------- SOURCE
• S8 ------ MODE ---------- L-CHECK
• S9 ------ ACOUSTIC COMP ------ OFF
• S10 ------ HIGH FILTER OFF ------ ON
• S11 ------ HIGH FILTER 20kHz ------ OFF
• S12 ------ HIGH FILTER 9kHz ------ OFF
• S13 ------ TREBLE TURNOVER ------ 2.5kHz
• S14 ------ TONE ---------- CANCEL
• S15 ------ BASS TURNOVER ------ 500Hz
• S16 ------ LOW FILTER 40Hz ------ OFF
• S17 ------ LOW FILTER 10Hz ------ OFF
• S18 ------ LOW FILTER OFF ------ ON
• S19 ------ MUTING ---------- OFF

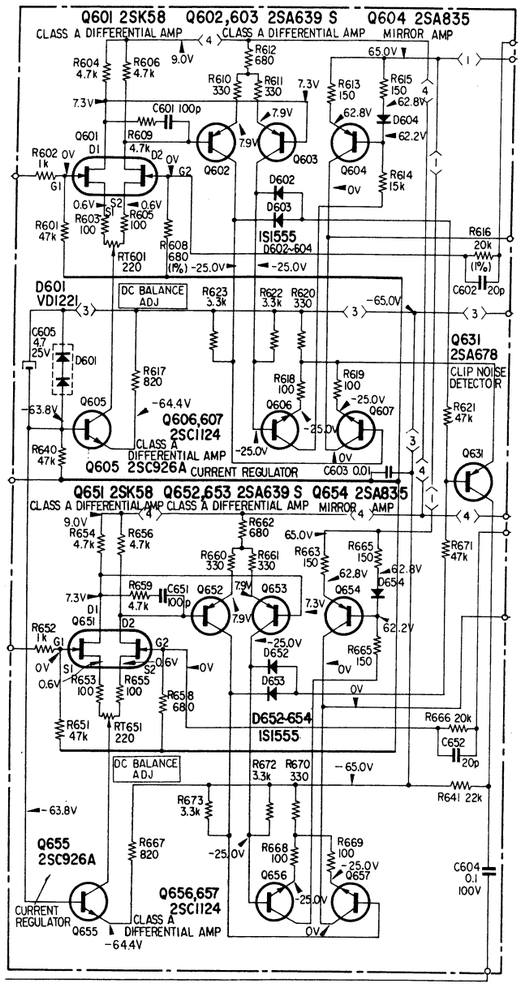


Note:
All resistance values are in ohms. (k = 1,000, M = 1,000 k)
All capacitance values are in μF except as indicated with p, which means μμF.
All voltages are dc measured with a VOM which has an input impedance of 20 k ohms/volt. No signal in.
Voltage variations may be noted due to normal production tolerances.

4-9. SCHEMATIC DIAGRAM — Power Amp Section —

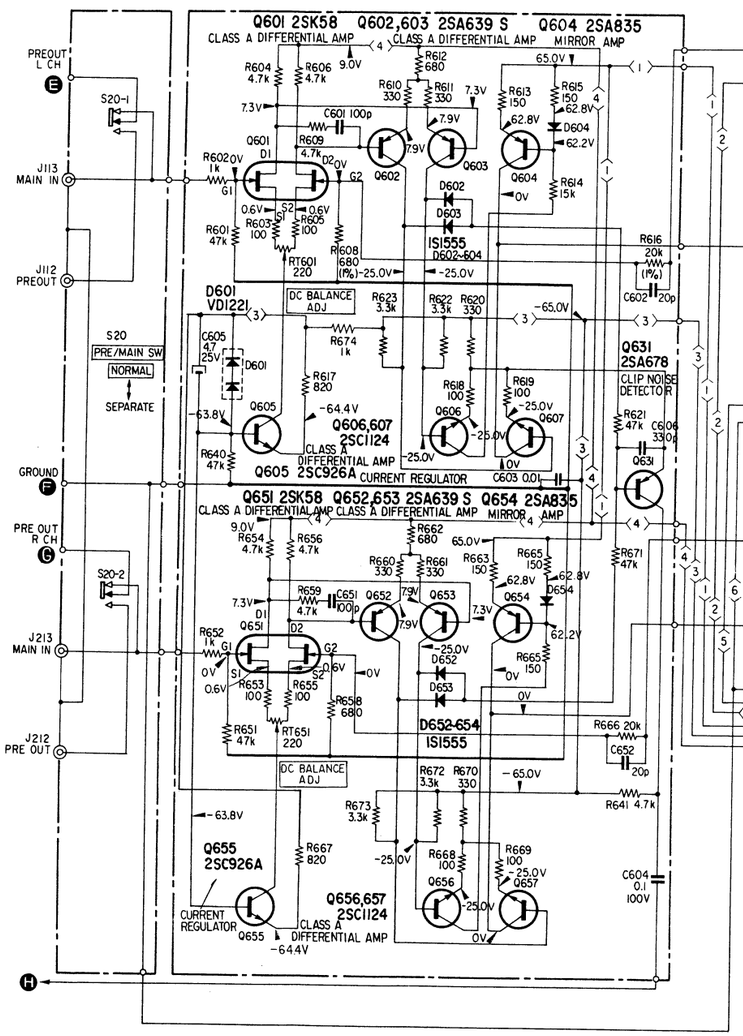
G CLASS A POWER AMP BOARD

USA Model only: Up to Serial No. 800,140

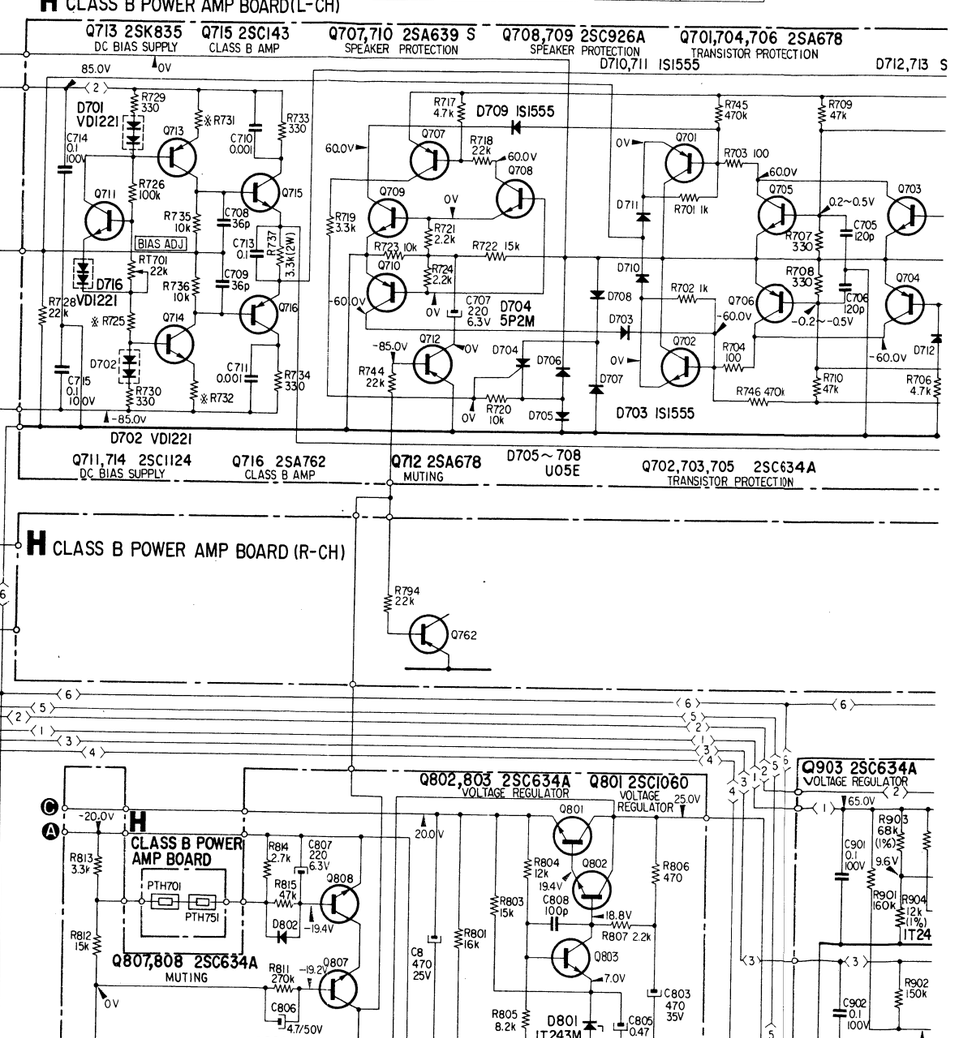

Q601 2SK58 Q602,603 2SA639 S Q604 2SA835
CLASS A DIFFERENTIAL AMP CLASS A DIFFERENTIAL AMP MIRROR AMP
D601 VDI22I
DC BALANCE ADJ
Q631 2SA678 CLIP NOISE DETECTOR
Q605 Q606,607 2SCII24 CLASS A DIFFERENTIAL AMP
Q605 2SC926A CURRENT REGULATOR
Q65I 2SK58 Q652,653 2SA639 S Q654 2SA835
CLASS A DIFFERENTIAL AMP CLASS A DIFFERENTIAL AMP MIRROR AMP
D652-654 IS1555
Q655 2SC926A
Q656,657 2SCII24 CLASS A DIFFERENTIAL AMP
CURRENT REGULATOR

G CLASS A POWER AMP BOARD

USA Model: Serial No. 800,141 and later
UK Model: Serial No. 600,001 and later
AEP Model: Serial No. 500,001 and later
E Model: Serial No. 400,001 and later



H CLASS B POWER AMP BOARD(L-CH)



H CLASS B POWER AMP BOARD (R-CH)

Q717~719 Q720~722	※ R725,775	※ R731, 781 ※ R732,782
2SK60I 2SJ18I −53	33k	1.8k
−54	33k	1.5k
−55	33k	1.2k
−56	30k	1.0k
−57	30k	1.0k
−58	30k	820

※ A	※ B
−9.4V~ −11.9V	9.4V~ 11.9V
−11.9V~ −14.4V	11.9V~ 14.4V
−14.4V~ −16.9V	14.4V~16.9V
−16.9V~ −19.4V	16.9V~19.4V
−19.4V~ −21.9V	19.4V~21.9V
−21.9V~ −24.4V	21.9V~24.4V

Note:
All resistance values are in ohms. (k = 1,000, M = 1,000 k)
All capacitance values are in μF except as indicated with p, which means μμF.
All voltages are dc measured with a VOM which has an input impedance of 20 k ohms/volt. No signal in.
Voltage variations may be noted due to normal production tolerances.

CLASS A POWER AMP BOARD

SA Model: Serial No. 800,141 and later
JK Model: Serial No. 600,001 and later
EP Model: Serial No. 500,001 and later
E Model: Serial No. 400,001 and later

Q717~719 Q720~722	※ R725,775	※ R731, 781 R732,782
2SK60 } -53 2SJ18 }	33k	1.8k
-54	33k	1.5k
-55	33k	1.2k
-56	30k	1.0k
-57	30k	1.0k
-58	30k	820

※ A	※ B
-9.4V~-11.9V	9.4V~11.9V
-11.9V~-14.4V	11.9V~14.4V
-14.4V~-16.9V	14.4V~16.9V
-16.9V~-19.4V	16.9V~19.4V
-19.4V~-21.9V	19.4V~21.9V
-21.9V~-24.4V	21.9V~24.4V

H CLASS B POWER AMP BOARD(L-CH)

H CLASS B POWER AMP BOARD (R-CH)

I POWER SUPPLY(A) BOARD

J POWER SUPPLY(B) BOARD

F FILTER BOARD AEP, UK Model

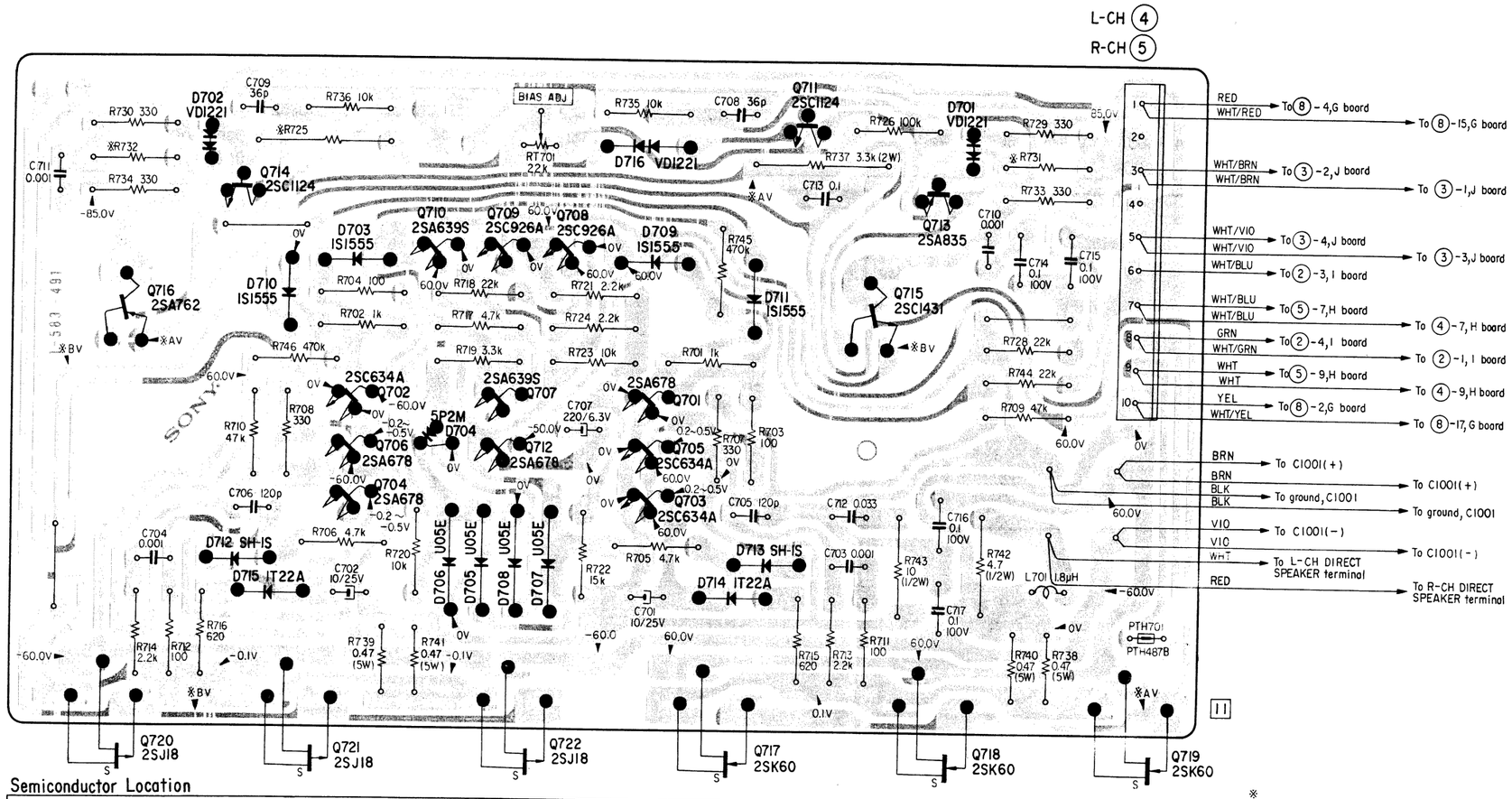
USA, E Model

• S20 ----- PRE/MAIN SW ----- NORMAL
• S21 ----- SPEAKER SW ----- ↕
• S22 ----- POWER SW ----- OFF

Note:
All resistance values are in ohms. (k = 1,000, M = 1,000 k)
All capacitance values are in μF except as indicated with p, which means μμF.
All voltages are dc measured with a VOM which has an input impedance of 20k ohms/volt. No signal in.
Voltage variations may be noted due to normal production tolerances.

4-10. MOUNTING DIAGRAM — H Board CLASS B POWER AMP —

— Conductor Side —

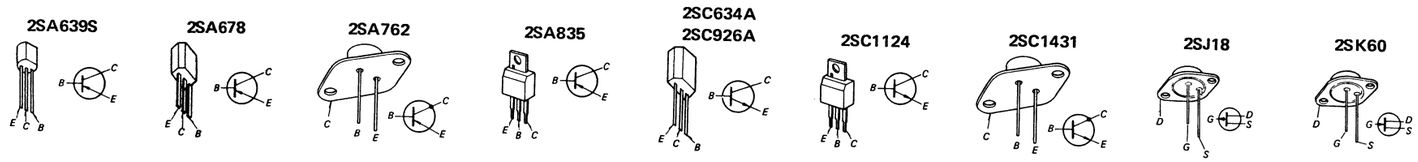


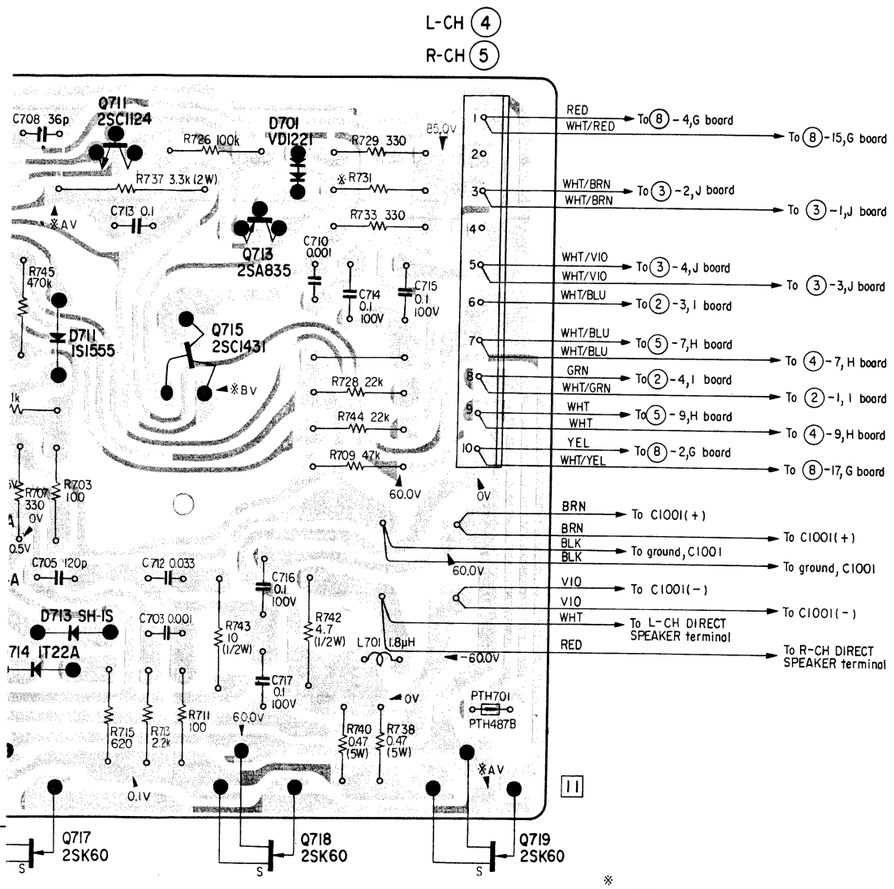
Semiconductor Location

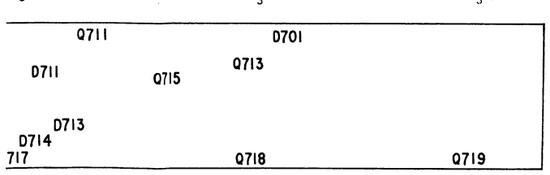
D702							D716	Q711		D701		
Q716	Q714	D710	D703	Q710	Q709	Q708	D709		D711		Q713	
										Q715		
			Q702									
			Q706	D704	Q707		Q701					
		D712	Q704		Q712		Q705					
		D715					Q703		D713			
				D706	D705	D708	D707		D714			
Q720		Q721			Q722			Q717		Q718		Q719

※

Q717~719 Q720~722	R725, 775	R731, 781 R732, 782	A	B
2SK60 / 2SJI8 -53	33k	1.8k	−9.4V~−11.9V	9.4V~11.9V
-54	33k	1.5k	−11.9V~−14.4V	11.9V~14.4V
-55	33k	1.2k	−14.4V~−16.9V	14.4V~16.9V
-56	30k	1.0k	−16.9V~−19.4V	16.9V~19.4V
-57	30k	1.0k	−19.4V~−21.9V	19.4V~21.9V
-58	30k	820	−21.9V~−24.4V	21.9V~24.4V



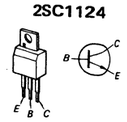




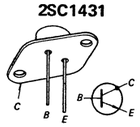
※

Q717~719 Q720~722	R725, 775	R731, 781 R732,782	A	B
2SK60, 2SJ18 -53	33k	1.8k	-9.4V~-11.9V	9.4V~11.9V
-54	33k	1.5k	-11.9V~-14.4V	11.9V~14.4V
-55	33k	1.2k	-14.4V~-16.9V	14.4V~16.9V
-56	30k	1.0k	-16.9V~-19.4V	16.9V~19.4V
-57	30k	1.0k	-19.4V~-21.9V	19.4V~21.9V
-58	30k	820	-21.9V~-24.4V	21.9V~24.4V

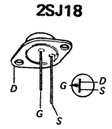
2SC1124



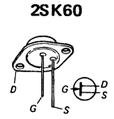
2SC1431



2SJ18



2SK60



MEMO

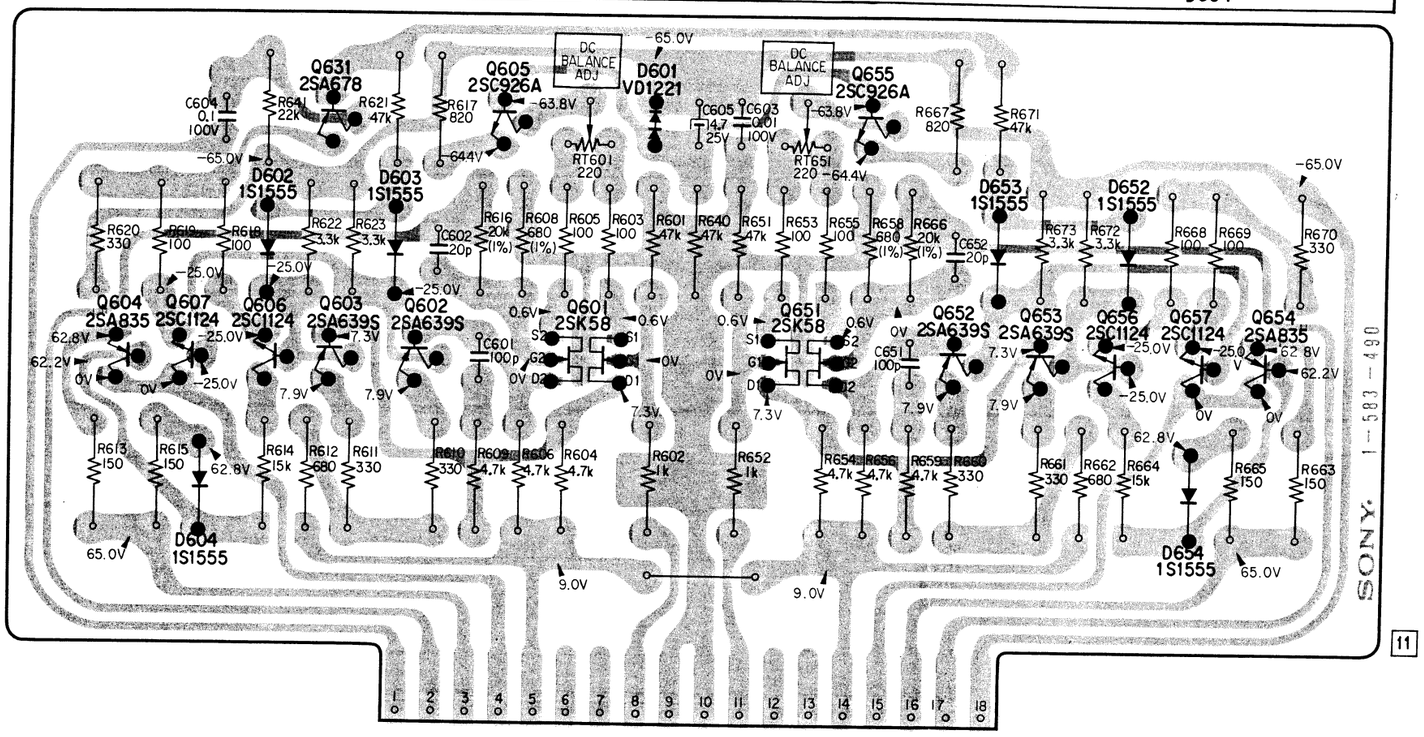
4-11. MOUNTING DIAGRAM – G Board CLASS A POWER AMP –

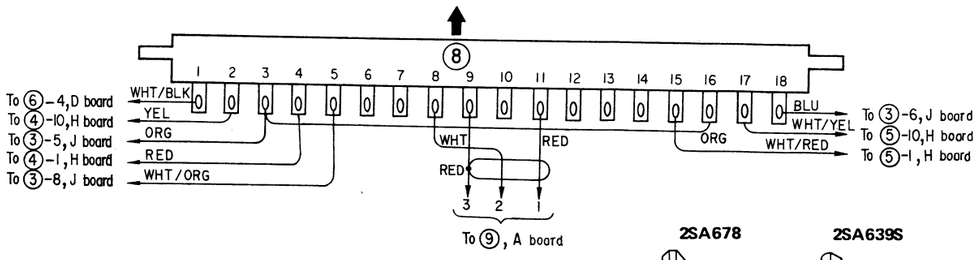
– Conductor Side –

USA Model only: Up to Serial No. 800,140

Semiconductor Location

Q604 Q607 D604 D602 Q606 Q631 Q603 D603 Q602 Q605 Q601 D601 Q651 Q655 Q652 D653 Q653 D652 Q656 Q657 D654 Q654

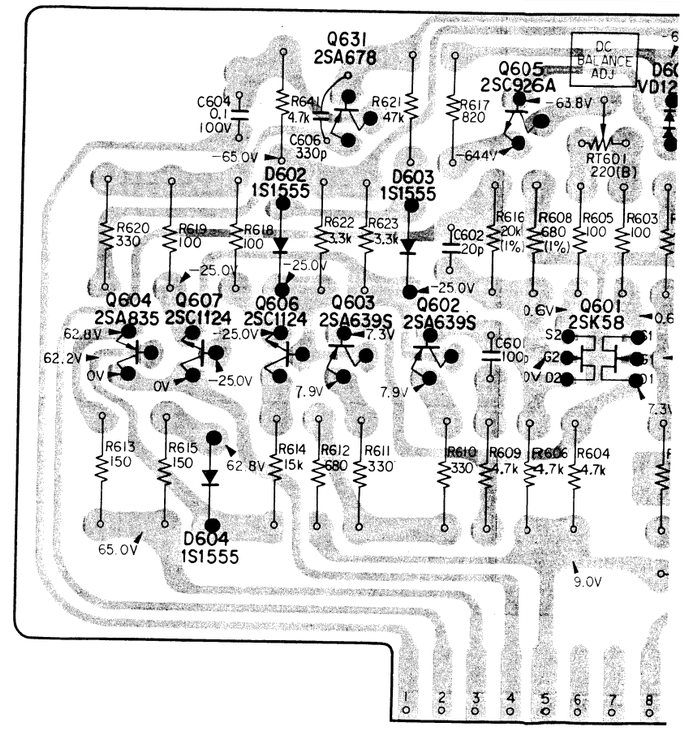


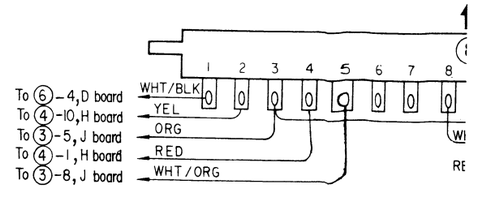

8
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
To 6 -4, D board WHT/BLK
To 4 -10, H board YEL
To 3 -5, J board ORG
To 4 -1, H board RED
To 3 -8, J board WHT/ORG
BLU To 3 -6, J board
WHT/YEL To 5 -10, H board
ORG WHT/RED To 5 -1, H board
WHT
RED
RED
3 2 1
To 9, A board

USA Model: Serial No. 800,141 and later
UK Model: Serial No. 600,001 and later
AEP Model: Serial No. 500,001 and later
E Model: Serial No. 400,001 and later

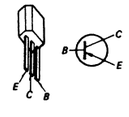
Semiconductor Location

Q604 Q607 D604 D602 Q606 Q631 Q603 D603 Q602 Q605 Q601 D6C

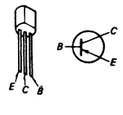




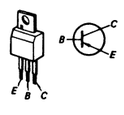
2SA678



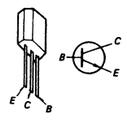
2SA639S



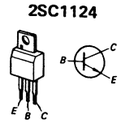
2SA835



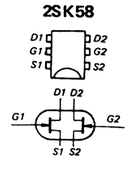
2SC926A



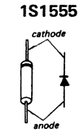
2SC1124



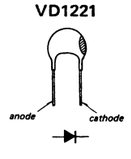
2SK58



1S1555



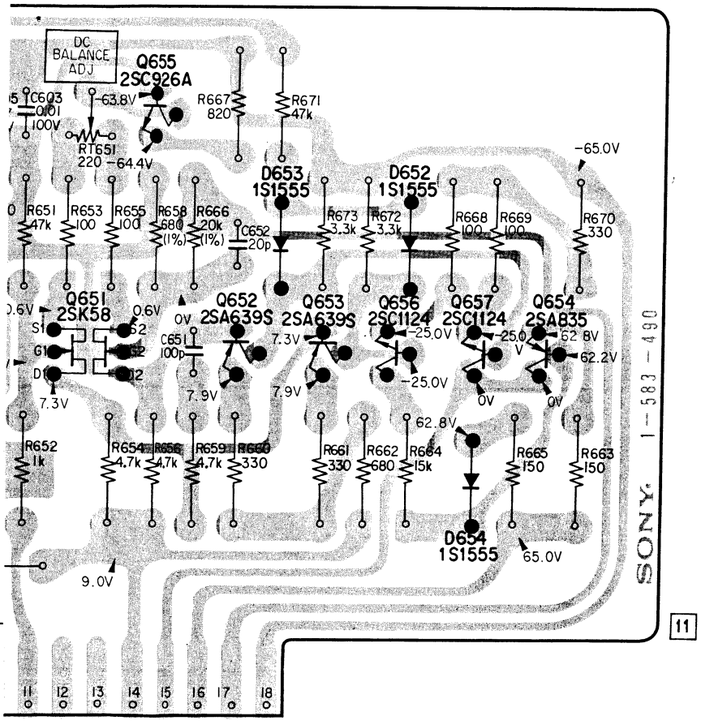
VD1221

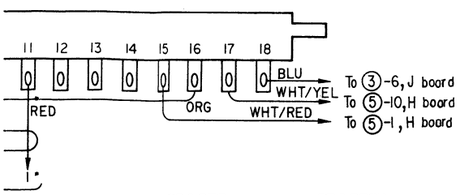


USA Model: Serial No. 800,141 and later
UK Model: Serial No. 600,001 and later
AEP Model: Serial No. 500,001 and later
E Model: Serial No. 400,001 and later

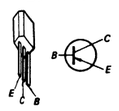
Semiconductor Location

Q655 D653 D652
Q651 Q652 Q653 Q656 Q657 Q654
D654





2SA678



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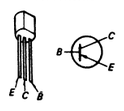
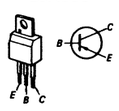


2SA835



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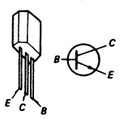

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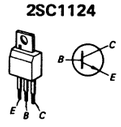
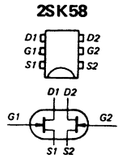
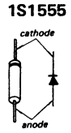


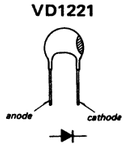
2SK58



1S1555

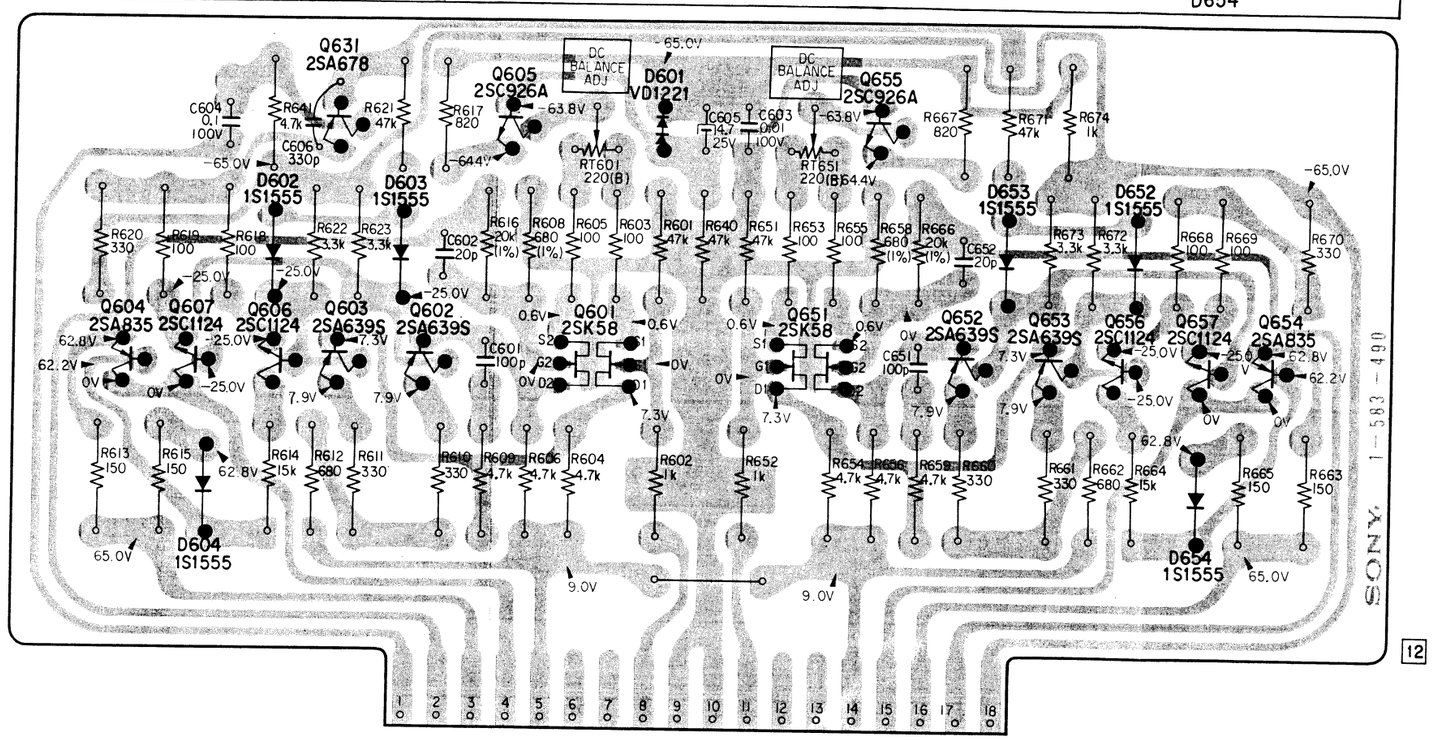


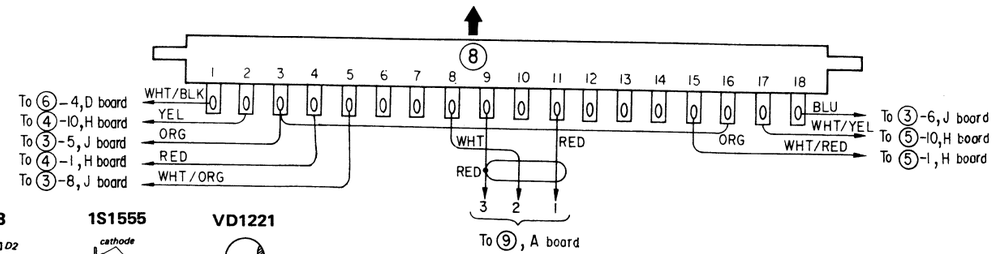
VD1221



Semiconductor Location

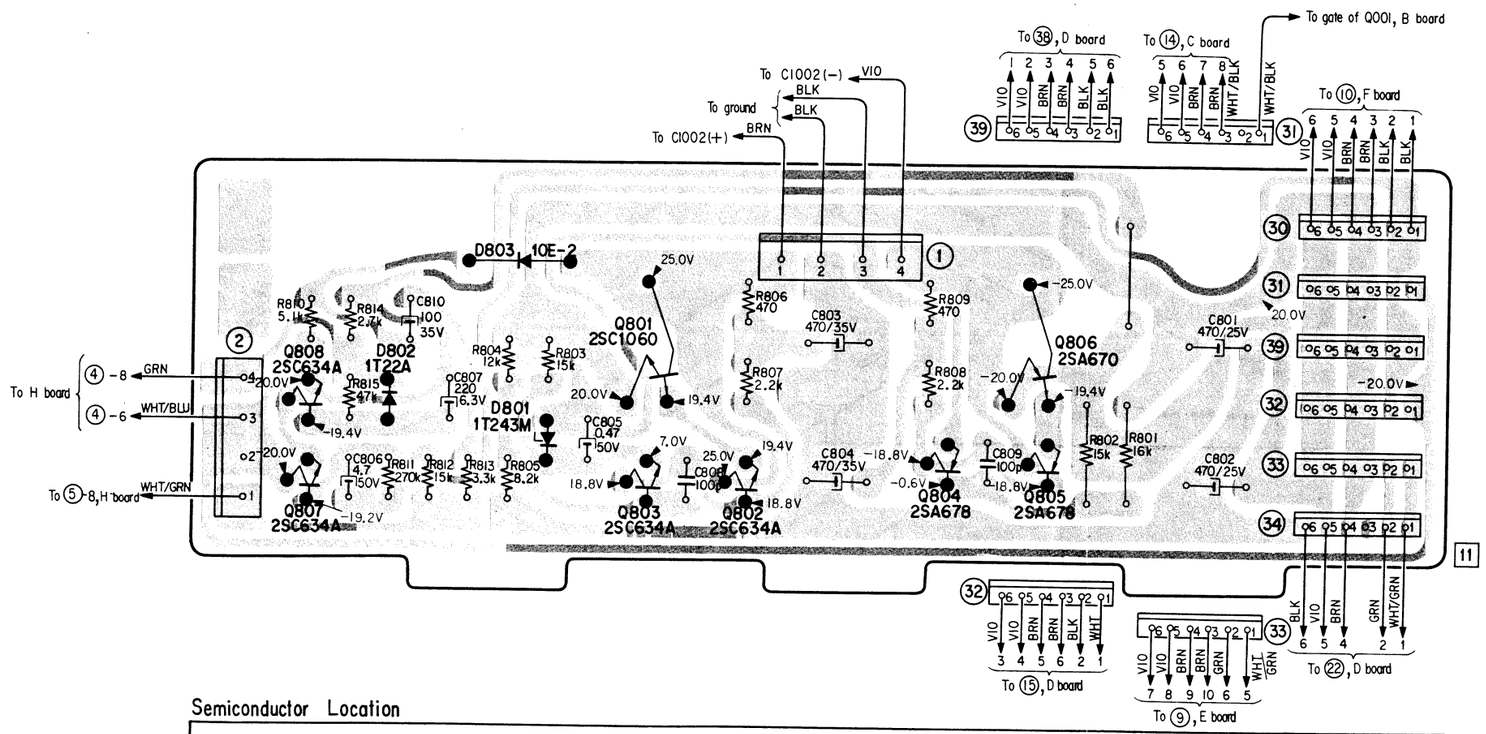
Q604 Q607 D604 Q602 Q606 Q631 Q603 D603 Q602 Q605 Q601 D601 Q655 Q651 D653 Q652 Q653 D652 Q656 Q657 Q654 D654





4-12. MOUNTING DIAGRAM — I Board POWER SUPPLY A —

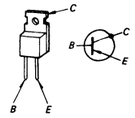
— Conductor Side —



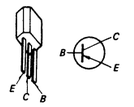
Semiconductor Location

Q808	D802	D803	Q801			Q806	
Q807		D801	Q803	Q802	Q804	Q805	

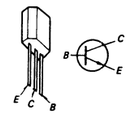
2SA670



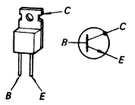
2SA678



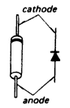
2SC634A



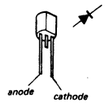
2SC1060



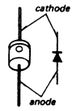
1T22A



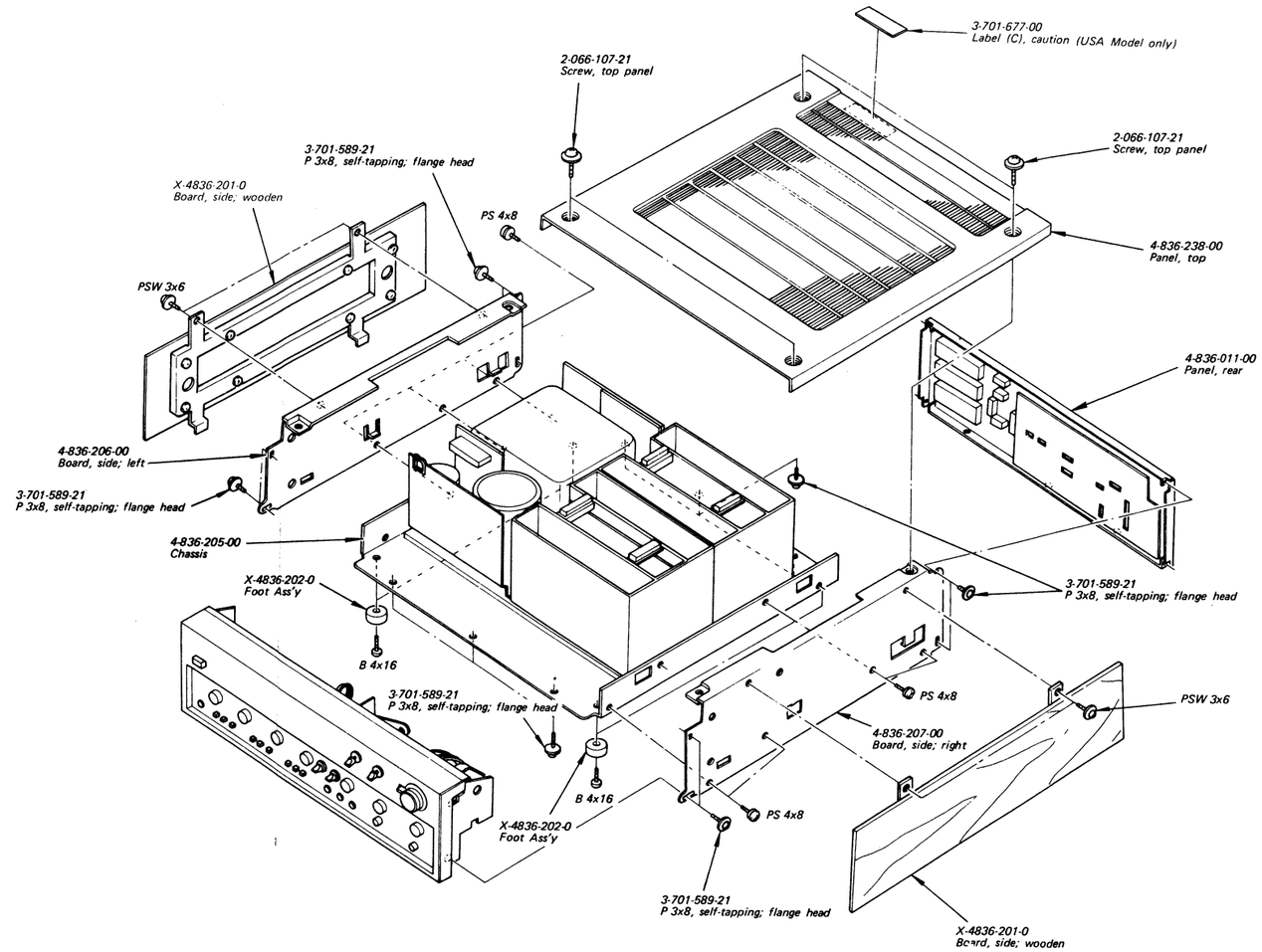
1T243M



10E-2



SECTION 5
EXPLODED VIEWS



–Hardware Nomenclature–

P – Pan Head Screw .....

PS – Pan Head Screw with Spring Washer .....

K – Flat Countersunk Head Screw ...

B – Binding Head Screw .....

RK – Oval Countersunk Head Screw ..

T – Truss Head Screw .....

R – Round Head Screw .....

F – Flat Fillister Head Screw .....

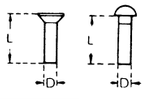
SC – Set Screw .....

E – Retaining Ring (E Washer) .....

W – Washer
SW – Spring Washer
LW – Lock Washer
N – Nut

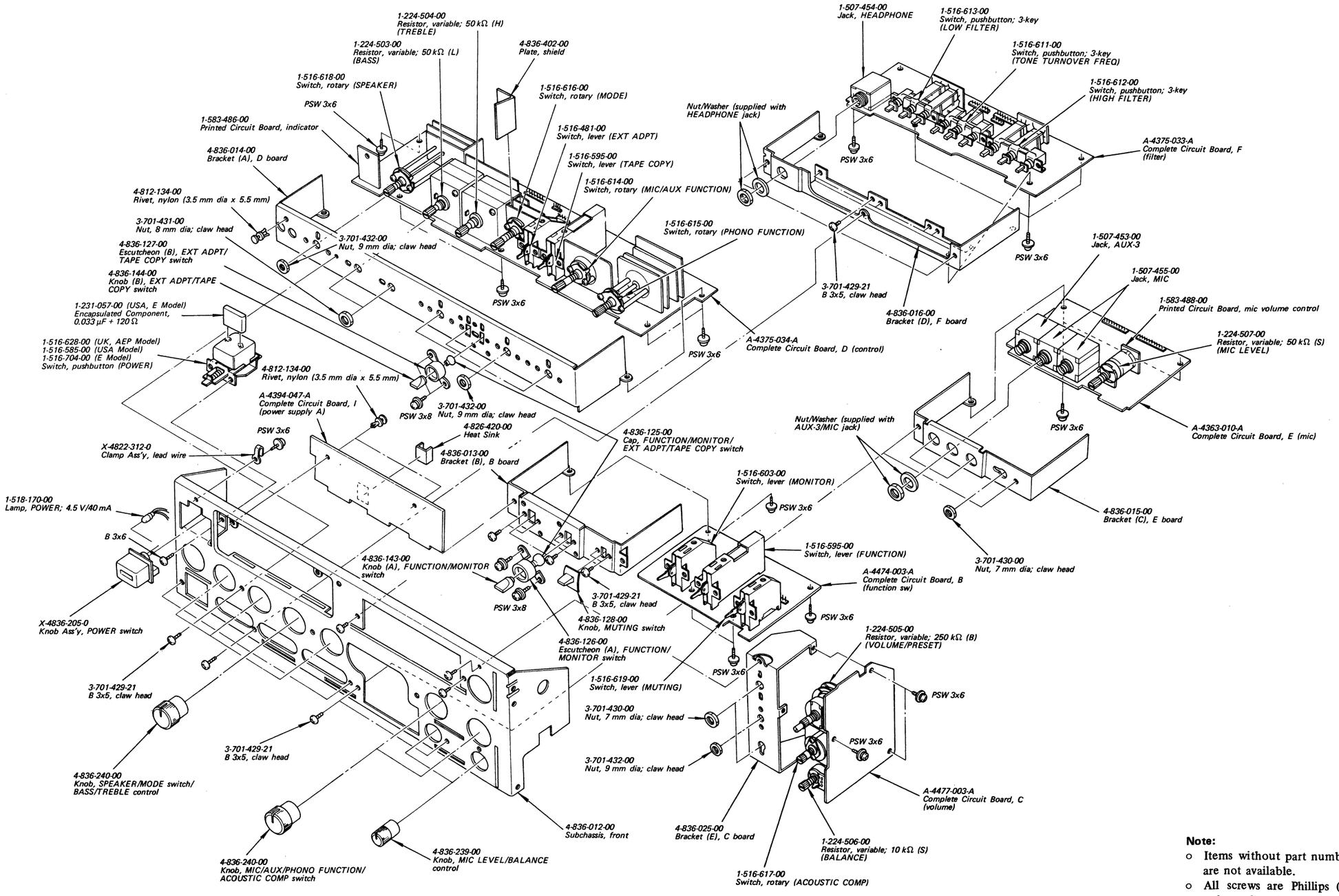
– Example –

⊕ P 3x10
- Type of Head
- Diameter in mm (D)
- Length in mm (L)



Note:
- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- "PPT" type screws may be replaced with "B" type screws.

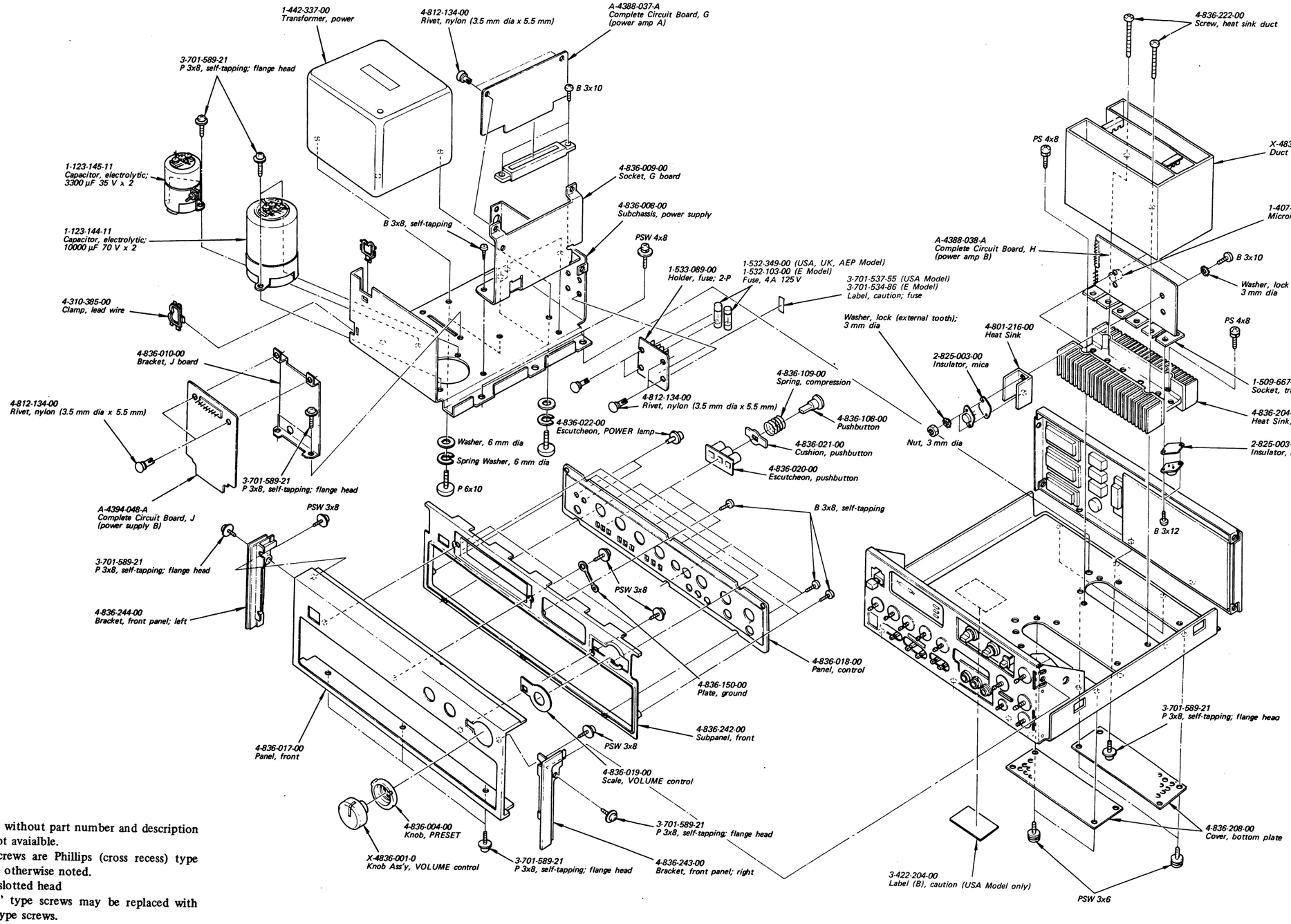
(2)



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- "PPT" type screws may be replaced with "B" type screws.

(3)



Note:

- Items without part number and description are not avaialble.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- "PPT" type screws may be replaced with "B" type screws.

Ref. No.	Part No.		Description
IC401		IC	BX-270
IC402		IC	BX-270
D101		Diode	1T243M
D102		Diode	1T243M
D103		Diode	1S1555
D104		Diode	TLR109
D105		Diode	TLR109
D201~D208		Diode	1S1555
D601		Diode	VD1221
D602~D604 (D652~D654)		Diode	1S1555
D701(D751)		Diode	VD1221
D702(D752)		Diode	VD1221
D703(D753)		Diode	1S1555
D704(D754)		Diode	5P2M
D705~D708 (D755~D758)		Diode	UO-5E
D709~D711 (D759~D761)		Diode	1S1555
D712(D762)		Diode	SH-1S
D713(D763)		Diode	SH-1S
D714(D764)		Diode	1T22A
D715(D765)		Diode	1T22A
D716(D766)		Diode	VD1221
D801		Diode	1T243M
D802		Diode	1T22A
D803		Diode	10D-2
D901		Diode	10D-2
D902		Diode	S5151
D903		Diode	S5151R
D904~D908		Diode	10D-2
D910		Diode	1T243M
D911		Diode	VD1221
D912		Diode	1T243M
Pth701 (Pth751)	1-800-340-21	Posistor	

Ref. No.	Part No.	Description
TRANSFORMER AND INDUCTORS		
L701(L751)	1-407-592-00	Microinductor, 1.8 μH
PT1	1-442-337-00	Transformer, power

CAPACITORS

Capacitors listed here are 50 V mylar type unless otherwise specified and in μF except as indicated with p (p means μμ). elect = electrolytic

C101(C151)	1-131-192-11	4.7	10V	tantalum
C102(C152)	1-102-978-11	220p	50V	ceramic
C103(C153)	1-131-192-11	4.7	10V	tantalum
C104(C154)	1-101-880-11	47p	50V	ceramic
C105(C155)	1-121-927-11	47	10V	elect
C106(C156)	1-105-522-12	0.056		
C107(C157)	1-129-701-11	0.01	100V	film
C108(C158)	1-101-880-11	47p	50V	ceramic
C109(C159)	1-121-927-11	47	10V	elect
C110(C160)	1-121-927-11	47	10V	elect
C111(C161)	1-105-505-12	0.0022		
C112(C162)	1-105-505-12	0.0022		
C113~C115 (C163~C165)	1-105-520-12	0.039		
C116(C166)	1-121-927-11	47	10V	elect
C117(C167)	1-101-880-11	47p	50V	ceramic
C121~C124	1-121-352-11	47	10V	elect
C125	1-121-912-11	1	50V	elect
C126	1-121-912-11	1	50V	elect
C127~C130	1-121-398-11	10	25V	elect
C131	1-105-661-12	0.001		
C132	1-102-978-11	220p	50V	ceramic
C133	1-102-973-11	100p	50V	ceramic
C201(C251)	1-121-913-11	3.3	25V	elect
C202(C252)	1-121-927-11	47	10V	elect
C203(C253)	1-105-661-12	0.001		
C204(C254)	1-105-661-12	0.001		
C205(C255)	1-102-953-11	18p	50V	ceramic
C206(C256)	1-121-913-11	3.3	25V	elect
C207(C257)	1-102-816-11	120p	50V	ceramic
C210	1-121-927-11	47	10V	elect

Ref. No.	Part No.			Description
C301(C351)	1-121-927-11	47	10V	elect
C302(C352)	1-121-916-11	10	16V	elect
C303(C353)	1-102-973-11	100p	50V	ceramic
C304(C354)	1-105-683-12	0.068		
C305(C355)	1-105-687-12	0.15		
C306(C356)	1-105-661-12	0.001		
C307(C357)	1-105-679-12	0.033		
C308(C358)	1-105-665-12	0.0022		
C309(C359)	1-101-880-11	47p	50V	ceramc
C401(C451)	1-105-667-12	0.0033		
C402(C452)	1-105-663-12	0.0015		
C403(C453)	1-102-116-11	680p	50V	ceramic
C404(C454)	1-105-663-12	0.0015		
C405(C455)	1-121-927-11	47	10V	elect
C406(C456)	1-105-685-12	0.1		
C407(C457)	1-105-680-12	0.039		
C408(C458)	1-121-927-11	47	10V	elect
C409(C459)	1-105-687-12	0.15		
C410(C460)	1-105-691-12	0.33		
C411	1-121-398-11	10	25V	elect
C412	1-121-398-11	10	25V	elect
C413	1-121-726-11	0.47	50V	elect
C601(C651)	1-102-973-11	100p	50V	ceramic
C602(C652)	1-102-958-11	20p	50V	ceramic
C603	1-105-713-12	0.01	100V	
C604	1-105-725-12	0.1	100V	
C605	1-121-395-11	4.7	25V	elect
C701(C751) C702(C752)	1-121-398-11	10	25V	elect
C703(C753) C704(C754)	1-105-661-12	0.001		
C705(C755) C706(C756)	1-102-816-11	120p	50V	ceramic
C707(C757)	1-121-419-11	220	6.3V	elect
C708(C758) C709(C759)	1-102-964-11	36p	50V	ceramic
C710(C760) C711(C761)	1-105-661-12	0.001		
C712(C762)	1-105-679-12	0.033		
C713(C763)	1-105-685-12	0.1		

Ref. No.	Part No.			Description
C714(C764) C715(C765)	1-105-725-12	0.1	100V	
C716(C766) C717(C767)	1-105-725-12	0.1	100V	
C801	1-121-940-11	470	25V	elect
C802	1-121-940-11	470	25V	elect
C803	1-121-941-11	470	35V	elect
C804	1-121-941-11	470	35V	elect
C805	1-121-726-11	0.47	50V	elect
C806	1-121-396-11	4.7	50V	elect
C807	1-121-419-11	220	6.3V	elect
C808	1-102-973-11	100p	50V	ceramic
C809	1-102-973-11	100p	50V	ceramic
C810	1-123-062-11	100	35V	elect
C901	1-105-725-12	0.1	100V	
C902	1-105-725-12	0.1	100V	
C903	1-121-726-11	0.47	50V	elect
C904	1-105-713-12	0.01	100V	
C905	1-102-355-11	0.01/0.01	500V	ceramic
C906	1-102-355-11	0.01/0.01	500V	ceramic
C907	1-105-713-12	0.01	100V	
C908	1-102-355-11	0.01/0.01	500V	ceramic
C909	1-102-355-11	0.01/0.01	500V	ceramic
C910	1-121-941-11	470	35V	elect
C911	1-121-941-11	470	35V	elect
C912	1-121-726-11	0.47	50V	elect
C913	1-105-713-12	0.01	100V	
C914	1-105-713-12	0.01	100V	
C1001	1-123-144-11	10,000/10,000	70V	elect
C1002	1-123-145-11	3,000/3,000	35V	elect

RESISTORS

All resistors are in Ω. ¼W, ±5%, carbon resistors (except particular type) are omitted.
Check schematic diagram for the resistance values.
k = 1000, M = 100 k

R110(R160)	1-212-534-21	1.1k	±1%	metal-oxide
R111(R161)	1-212-530-21	750	±1%	metal-oxide

Ref. No.	Part No.		Description	
R112(R162)	1-212-669-21	4.3k	±1%	metal-oxide
R113(R163)	1-212-696-21	56k	±1%	metal-oxide
R114(R164)	1-212-675-21	7.5k	±1%	metal-oxide
R117(R167)	1-212-540-21	2k	±1%	metal-oxide
R118(R168)	1-212-684-21	18k	±1%	metal-oxide
R128(R178)	1-212-684-21	18k	±1%	metal-oxide
R129(R179)	1-212-540-21	2k	±1%	metal-oxide
R608(R658)	1-212-529-21	680	±1%	metal-oxide
R613(R663)	1-211-526-11	150	(nonflammable)	
R615(R665)	1-211-526-11	150	(nonflammable)	
R616(R666)	1-212-685-21	20k	±1%	metal-oxide
R619(R669)	1-211-522-11	100	(nonflammable)	
R620(R670)	1-211-534-11	330	(nonflammable)	
R674	1-211-935-11	1k	(nonflammable)	
R725(R775)	1-206-699-11	30k	2W	metal-oxide
R729(R779)	1-211-534-11	330	(nonflammable)	
R730(R780)	1-211-534-11	330	(nonflammable)	
R733(R783)	1-211-534-11	330	(nonflammable)	
R734(R784)	1-211-534-11	330	(nonflammable)	
R737(R787)	1-206-676-11	3.3k	2W	metal-oxide
R738~R741 (R788~R791)	1-217-158-11	0.47	5W	metal
R742(R792)	1-202-517-11	4.7	½W	composition
R743(R793)	1-202-525-11	10	½W	composition
R903	1-212-698-21	68k	±1%	metal-oxide
R904	1-212-680-21	12k	±1%	metal-oxide
R910	1-211-490-11	4.7	(nonflammable)	
R911	1-211-490-11	4.7	(nonflammable)	
R912	1-211-498-11	10	(nonflammable)	
R913	1-211-498-11	10	(nonflammable)	
RT601 (RT651)	1-224-487-00	200, adjustable (dc balance adj.)		
RT701 (RT751)	1-224-491-00	22k, adjustable (dc bias adj.)		
RV021~RV023 (RV071~RV073)	1-224-498-00	100k (B), variable (LEVEL ADJ)		

Ref. No.	Part No.	Description
RV101 (RV151)	1-224-504-00	50k (H), variable (TREBLE)
RV102 (RV152)	1-224-503-00	50k (L), variable (BASS)
RV201 (RV251)	1-224-507-00	50k (S), variable (MIC LEVEL)
RV301 (RV351)	1-224-505-00	250k (B), variable (VOLUME/PRESET)
RV302 (RV352)	1-224-506-00	10k (S), variable (BALANCE)

SWITCHES

S1	1-516-081-00	Slide (IMPEDANCE)
S2	1-516-614-00	Rotary (MIC/AUX FUNCTION)
S3	1-516-595-00	Lever/Slide (FUNCTION)
S4	1-516-603-00	Lever/Slide (MONITOR)
S5	1-516-481-00	Lever/Slide (EXT ADPT)
S6	1-516-595-00	Lever/Slide (TAPE COPY)
S7	1-516-615-00	Rotary (PHONO FUNCTION)
S8	1-516-616-00	Rotary (MODE)
S9	1-516-617-00	Rotary (ACOUSTIC COMP)
S10~S12	1-516-612-00	Pushbutton, 3-key (HIGH FILTER)
S13~S15	1-516-611-00	Pushbutton, 3-key (TONE, TURNOVER FREQ)
S16~S18	1-516-613-00	Pushbutton, 3-key (LOW FILTER)
S19	1-516-619-00	Lever/Slide (MUTING)
S20	1-516-081-00	Slide (PRE/POWER AMP)
S21	1-516-618-00	Rotary (SPEAKER)
S22	1-516-704-00	Pushbutton (POWER) (E Model)
	1-516-585-00	Pushbutton (POWER) (USA Model)
	1-516-628-00	Pushbutton (POWER) (UK, AEP Model)

MISCELLANEOUS

CNJ1~CNJ3	1-509-403-00	Outlet, ac (USA, E Model)
CNJ1	1-509-546-00	Connector, ac input, 3-P (UK, AEP Model)
CNP1	1-534-819-00	Cord, power (UK Model)
	1-534-754-00	Cord, power (AEP Model)
	1-534-993-00	Cord, power (E Model)
	1-534-992-00	Cord, power (USA Model)
CP1	1-231-057-00	Encapsulated Component, 0.033μF + 120Ω (USA, E Model)
F1,F2	1-532-103-00	Fuse, 125V/4A (E Model)
	1-532-349-00	Fuse, 125V/4A (USA, UK, AEP Model)

Ref. No.	Part No.	Description
J101(J201) J102(J202)	1-507-416-00	Jack, phono; 4-P
J103(J203) J105(J205)	1-536-352-00	Jack, phono; 4-P
J104(J204)	1-507-385-00	Jack, phono; 2-P
J106~J113 (J206~J213)	1-507-416-00	Jack, phono; 4-P
J301	1-507-453-00	Jack, AUX-3
J302,J303	1-507-455-00	Jack, MIC
J304	1-507-454-00	Jack, HEADPHONE
PL1	1-518-170-00	Lamp, POWER; 4.5 V/40 mA
TM1~TM3	1-535-090-00	Binding Post, 4 unit (SPEAKER)
VS	1-526-520-11	Selector, voltage
	1-508-648-00	Connector, 4-P (male)
	1-508-651-00	Connector, 10-P (male)
	1-508-652-00	Connector, 8-P (male)
	1-508-684-00	Connector, 2-P (male)
	1-508-693-00	Connector, 10-P (male)
	1-508-694-00	Connector, 8-P (male)
	1-508-695-00	Connector, 6-P (male)
	1-508-696-00	Connector, 4-P (male)
	1-509-667-00	Socket, transistor
	1-533-089-00	Holder, fuse; 2-P
	1-536-354-00	Pin, terminal

Part No.	Description
PACKING MATERIALS AND ACCESSORIES	
0-591-219-01	Note, instruction manual (E Model only)
1-506-113-00	Plug, shorting
1-534-514-13	Cord, connection (RK-81)
2-057-975-00	Bag, polyethylene; accessories
3-701-020-00	Bag, polyethylene; instruction manual
3-780-445-22	Manual, instruction
3-793-793-00	Sheet, check
3-793-794-00	Cover, instruction manual
3-793-796-21	Diagram, signal flow
3-701-300-00	Bag, polyethylene; unit
4-836-024-00	Carton
4-836-257-00	Cushion, side
4-836-258-00	Cushion, lower
4-836-259-00	Cushion
X-3701-029-0	Card Ass'y, warranty (USA Model only)
1-506-138-11	Plug, phono (red) (USA Model only)
1-506-138-12	Plug, phono (white) (USA Model only)
3-701-730-00	Bag, polyethylene; IBM card (USA Model only)
3-701-742-00	Card, IBM (USA Model only)

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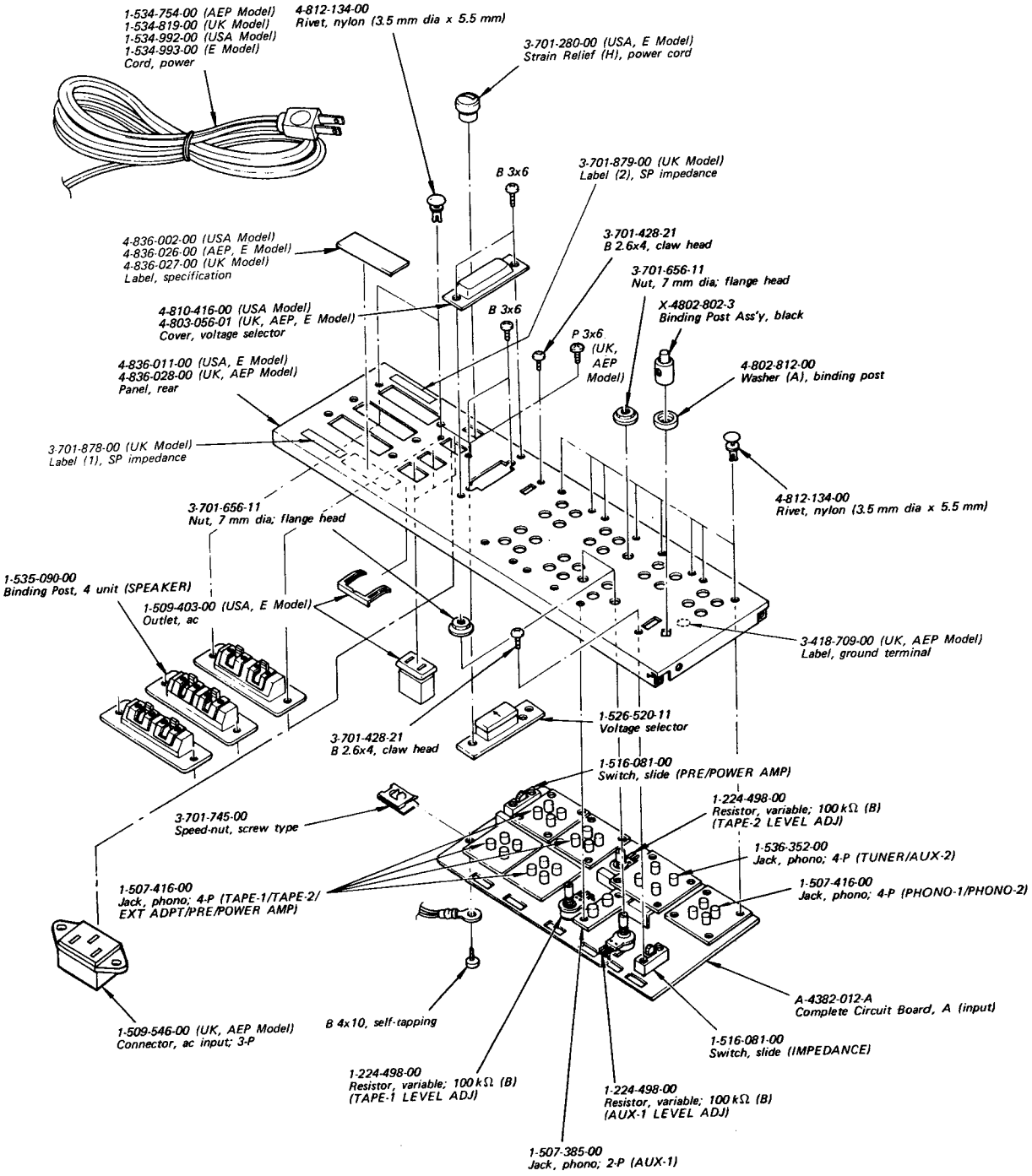

Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- "PPT" type screws may be replaced with "B" type screws.

SECTION 6
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
		CIRCUIT BOARDS
	A-4382-012-A	A (input), complete
	A-4474-003-A	B (function switch), complete
	A-4477-003-A	C (volume), complete
	A-4375-034-A	D (control), complete
	A-4363-010-A	E (mic), complete
	A-4375-033-A	F (filter), complete
	A-4388-037-A	G (power amp (A)), complete
	A-4388-038-A	H (power amp (B)), complete
	A-4394-047-A	I (power supply (A)), complete
	A-4394-048-A	J (power supply (B)), complete
	1-583-486-00	Indicator
	1-583-488-00	Mic Amp
		SEMICONDUCTORS
Q001(Q051)		FET 2SK43
Q002(Q052)		FET 2SK43
Q101		Transistor 2SC1637
Q102		Transistor 2SA705
Q103		Transistor 2SA705
Q104		FET 2SK43
Q105		Transistor 2SC634A
Q106		Transistor 2SA678
Q107		Transistor 2SA678
Q108~Q112		Transistor 2SC634A
Q151		Transistor 2SC1637
Q152		Transistor 2SA705
Q153		Transistor 2SA705
Q154		FET 2SK43
Q601(Q651)		FET 2SK58
Q602(Q652)		Transistor 2SA639S
Q603(Q653)		Transistor 2SA639S
Q604(Q654)		Transistor 1S1555
Q605(Q655)		Transistor 2SC926A
Q606(Q656)		Transistor 2SC1124
Q607(Q657)		Transistor 2SC1124
Q631		Transistor 2SA678
Q701(Q751)		Transistor 2SA678
Q702(Q752)		Transistor 2SA634A
Q703(Q753)		Transistor 2SC634A
Q704(Q754)		Transistor 2SA678
Q705(Q755)		Transistor 2SC634A
Q706(Q756)		Transistor 2SA678
Q707(Q757)		Transistor 2SA639S
Q708(Q758)		Transistor 2SC926A
Q709(Q759)		Transistor 2SC926A
Q710(Q760)		Transistor 2SA639S
Q711(Q761)		Transistor 2SC1124
Q712(Q762)		Transistor 2SA678
Q713(Q763)		Transistor 2SA835
Q714(Q764)		Transistor 2SC1124
Q715(Q765)		Transistor 2SC1431
Q716(Q766)		Transistor 2SA762
Q717~Q719 (Q767~Q769)		FET 2SK60
Q720~Q722 (Q770~Q772)		FET 2SJ18
Q801		Transistor 2SC1060
Q802		Transistor 2SC634A
Q803		Transistor 2SC634A
Q804		Transistor 2SA678
Q805		Transistor 2SA678
Q806		Transistor 2SA670
Q807		Transistor 2SC634A
Q808		Transistor 2SC634A
Q901		Transistor 2SA671
Q902		Transistor 2SC1061
Q903		Transistor 2SC634A
Q904		Transistor 2SA678
Q905		Transistor 2SA671
IC101		IC BX-269
IC102		IC CX-0461
IC103		IC BX-270
IC104		IC BX-269
IC201		IC CX-0461
IC301		IC BX-270